

For Reference

NOT TO BE TAKEN FROM THIS ROOM

Ex LIBRIS
UNIVERSITATIS
ALBERTAE NSIS



T H E U N I V E R S I T Y O F A L B E R T A

RELEASE FORM

NAME OF AUTHOR

Ian Humphreys

TITLE OF THESIS

Single Aiming and Reciprocal Tasks:

A Comparison

DEGREE FOR WHICH THESIS WAS PRESENTED Master of Science

YEAR THIS DEGREE GRANTED 1982

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

THE UNIVERSITY OF ALBERTA

Single Aiming and Reciprocal Tapping:

A Comparison

by



Ian Humphreys

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE


OF Master of Science

in

DEPARTMENT Physical Education

EDMONTON, ALBERTA

Fall, 1982



Digitized by the Internet Archive
in 2023 with funding from
University of Alberta Library

<https://archive.org/details/Humphreys1982>

THE UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and
recommend to the Faculty of Graduate Studies and Research, for
acceptance, a thesis entitled

Single Aiming and Reciprocal Tasks;

A Comparison

submitted by Ian Humphreys

in partial fulfilment of the requirements for the degree of
Master of Science

ABSTRACT

Two experiments were conducted in order to compare characteristics of single aiming and reciprocal rapid aiming tasks. It was hypothesized that the two movement classes, reciprocal and single aiming, differed in the demands they placed on attentional processes. The result of this proposed difference in attentional demand was thought to account for the observation that the performance of reciprocal tapping tasks was predicted by Fitts (1954) Law, while the performance of single rapid aiming movements was not. Conversely, performance of single aiming tasks was predicted by the Schmidt et al (1978, 1979) formulation which could not accomodate reciprocal tasks. Experiment One provided some evidence to support the theory that when subjects operated below the capacity of the motor processing system the performance characteristics of the aiming movements whether single or reciprocal may be predicted by the Schmidt et al formulation. When subjects operated beyond the capacity of the motor system then characteristics of the aiming response may be predicted by Fitts' Law. Experiment Two was an attempt to manipulate the demands placed on a subjects attention when performing a reciprocal movement aiming task. The object of the experiment was to demonstrate a move from situations predicted by the Schmidt formulations to situations predicted by Fitts Law as demands on attention in the reciprocal movement task increased. Due to methodological problems this experiment failed to provide useful data.

ACKNOWLEDGEMENTS

My sincere thanks and appreciation goes to Dr. R.B. Wilberg, for his patient help and advice during the course of my program and in the writing of this thesis. Even in his absence his presence could always be felt. My thanks also go to Dr. R. Alderman and Dr. J. Bishop for their insight during the defence of my thesis.

Most of all, I would like to take this opportunity to express my deepest love for my wife, Sally, who has worked for so long to support us both while this thesis was completed. No thanks could ever be enough.

TABLE OF CONTENTS

| | PAGE |
|----------------------------------------------------------|------|
| INTRODUCTION | 1 |
| EXPERIMENT ONE..... | 8 |
| The effect of attentional demand on Speed Accuracy | |
| Trade-Off in single aiming and reciprocal tasks | |
| EXPERIMENT TWO..... | 34 |
| Peripheral demands on attention and their effect on | |
| performance of reciprocal tasks | |
| GENERAL DISCUSSION..... | 51 |
| APPENDIX A..... | 66 |
| Review of literature | |
| APPENDIX B..... | 106 |
| Sample data from a single trial in Experiment One | |
| APPENDIX C..... | 111 |
| Results of analysis of variance performed in Experiments | |
| One and Two | |
| APPENDIX D..... | 138 |
| Raw data from Experiments One and Two | |

LIST OF TABLES

| TABLE | DESCRIPTION | PAGE |
|-------|--------------------------------------------------------------------------------------------------------------------------------|------|
| 1. | F ratios obtained from the three way analysis of variance performed on raw data for each dependent variable of Experiment One | 23 |
| 2. | F ratios obtained from analysis of variance performed on standard deviation data for each dependent variable in Experiment One | 24 |
| 3. | F ratios obtained from analysis of variance performed on mean data for each dependent variable in Experiment Two | 41 |
| 4. | F ratios obtained from analysis of variance performed on standard deviation data for each dependent variable in Experiment Two | 42 |

LIST OF FIGURES

| FIGURE | | PAGE |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. | Mean (a) and standard deviation (b) of duration of accelerative impulse as a function of amplitude and treatment condition (Experiment 1) | 25 |
| 2. | Mean (a) and standard deviation (b) of duration of decelerative impulse as a function of amplitude and treatment condition (Experiment 1) | 25 |
| 3. | Mean (a) and standard deviation (b) of magnitude of accelerative impulse as a function of amplitude and treatment condition (Experiment 1) | 26 |
| 4. | Mean (a) and standard deviation (b) of magnitude of decelerative impulse as a function of amplitude and treatment condition (Experiment 1) | 26 |
| 5. | Mean distance moved prior to (a) and following (b) correction as a function of amplitude and treatment condition (Experiment 1) | 27 |
| 6. | Effective target width as a function of movement amplitude and treatment condition (a) and movement amplitude and velocity (b) (Experiment 1) | 27 |
| 7. | Reaction time as a function of amplitude for Conditions One and Two (Experiment 1) | 28 |
| 8. | Movement time as a function of amplitude and treatment condition (Experiment 1) | 28 |
| 9. | Mean (a) and standard deviation (b) of duration of accelerative impulse as a function of amplitude and peripheral target width (Experiment 2) | 43 |

| FIGURE | | PAGE |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 10. | Mean (a) and standard deviation (b) of duration of decelerative impulse as a function of amplitude and peripheral target width (Experiment 2) | 43 |
| 11. | Mean (a) and standard deviation (b) of magnitude of accelerative impulse as a function of amplitude and peripheral target width (Experiment 2) | 44 |
| 12. | Mean (a) and standard deviation (b) of magnitude of decelerative impulse as a function of amplitude and peripheral target width (Experiment 2) | 44 |
| 13. | Reaction time (a) and movement time (b) as a function of amplitude and peripheral target width (Experiment 2) | 45 |
| 14. | Effective target width as a function of amplitude and peripheral target width (Experiment 2) | 45 |

The earliest mathematical relationship between the speed and accuracy of movement was provided by Fitts (1954). Fitts demonstrated experimentally that movement time (MT) was a linear function of the index of difficulty (ID) which was defined in information terms as:

$$\log_2 2A/W$$

where A was the amplitude of movement and W the width of the aimed for target. This relationship, celebrated as Fitts' Law, accommodated data from numerous experimental sources (Knight & Dagnall, 1967; Fitts & Peterson, 1964; Fitts & Radford, 1966). Although attempts were made to improve upon Fitts' equation, none resulted in any significant change (Welford, 1966). Stated simply, Fitts proposed that if movements of average amplitude were speeded up then each movement could provide less information and, as a result, movement variability would be increased by a specified amount.

Crossman and Goodeve (Note 1) and later Keele (1968) put forward a theory to account for Fitts' findings. In this theory the authors proposed a system of movement control based on the continued monitoring of feedback information and the subsequent issuance of movement corrections. However, research aimed at examining movement patterns for evidence of corrections was equivocal. Annett, Golby and Kay (1958) and Brown and Slater-Hammel (1949) demonstrated the presence of movement corrections, while Langolf, Chaffin and Foulke (1976), in a microminiature task, failed to uncover evidence of within movement corrections. Furthermore, the theory of feedback control could not accommodate movements which were completed within a simple reaction time. Such rapid movements allowed insufficient time for processing of feedback information and the subsequent issuance of corrections based

on this information (Hick, 1952; Welford, 1952; Schmidt, Zelaznick, Hawkins, Frank and Quinn, 1979).

Howarth and Beggs (1970) and Beggs and Howarth (1972) proposed a visually mediated intermittent feedback mechanism as the basis for the control of aimed movements. They proposed that the error on target was related to the velocity of limb movement during the terminal phases of the movement. Error on target was thought to be proportional to the distance from the target at which the last correction was made. However, the theory was equally unable to account for movements completed within one reaction time.

Schmidt et al (1978, 1979) proposed an alternate theory based on the observation that the motor system appears to be contaminated by noise, (within subject variability). They proposed that this variability was related to parameters of the movement i.e. amplitude and speed. Central to the theory was the notion that movements could be centrally organized by a motor program which, when executed, could complete a movement without the involvement of peripheral feedback.

The Schmidt theory related the variability in target accuracy, effective target width (W_e), to the within subject variability of velocity, at the end of acceleration. Schmidt reasoned that if movement velocity was directly proportional to the magnitude of the impulsive forces, then variability in movement velocity must also be proportional to the variability of the impulsive forces. Therefore, as movement velocity increased, variability in the magnitude of the impulsive force and the time over which the force was acting also increased. This resulted, according to Schmidt, in greater error in

achieving the aimed for target.

The basic statement of the model is given by:

$$W_e \propto A/MT$$

This formulation seems to describe rapid movements (less than 200 msec duration) but cannot account for slower movements of longer duration. The lack of a single formula which accommodated both rapid and slow aiming movements prompted Klapp (1975) to suggest that movements of long duration were under feedback mediated control, while rapid short duration movements required control by motor programs.

Much evidence favoring the central control of movement was based on the observation that responses to feedback information were often in excess of the duration of many movements (Lashley, 1951; Keele, 1968; Glencross, 1975, 1977; Keele & Posner, 1968). Lenneberg (1967) argued that the many hundreds of coordinated muscular movements required in the production of a relatively few seconds of speech could not be under feedback mediated control. Taub and Berman (1968) studied the performance of gross movements in rhesus monkeys following deafferentation of the monkey's limbs (surgical elimination of afferent feedback). Taub and Berman found that monkeys could use deafferented limbs in a reasonably coordinated manner following deafferentation. Laszlo (1967, 1968, 1969) duplicated the results of Taub and Berman in human subjects by employing ischemic nerve block techniques. However, doubts about the complete efficiency of such techniques (Glencross & Oldfield, 1975) cast doubt on the importance of such research.

While much evidence has been cited to favour centrally programmed

control of movement, the importance of feedback information cannot be discounted. Smith (1962) reported that deafferented specimens could make only jerky uncoordinated movements in the absence of feedback information. Fine graded manipulative movements were not possible. Glencross (1975) believed that even centrally generated movements must be integrated with peripheral sensory information at some stage of execution.

In order to examine possible programmed features of movement Kelso, Southard and Goodman (1979) employed a simultaneous two handed movement paradigm. They found that movement time was common to both hands (as measured by between hands correlation) while movement amplitude and height were independent. They postulated that movement time was a programmed feature of movements. Using a related procedure Schmidt et al (1979) demonstrated that only 1% of variability in movement endpoint (a measure of spatial accuracy) could be associated with incorrect program selection. However, high degrees of variability were related to selection of particular parameters. A high correlation between effective target width and the magnitude of the accelerative impulse supported the theory that impulse variability was a major determiner of W_e .

Schmidt et al proposed that movements could be programmed in advance and that certain parameters of the program specified the magnitude and duration of the accelerative impulse. Such a theory would predict that if a mass was added to a limb following the initiation of a programmed rapid movement that the limb would fall short of the aimed for target. This would be due to the inability of

the system to modify the parameters of the program until the movement had been completed. Damaging evidence to this position was presented by Bizzi, Polit and Morasso (1976); Bizzi, Dev, Morasso and Polit (1978) and Polit and Bizzi (1979). Examining movement control in normal intact and deafferented monkeys they demonstrated that addition of mass to a limb following initiation of a movement did not alter the accuracy of the movement in either normal or deafferented specimens. Furthermore, displacement of the limb prior to the initiation of the movement did not affect the resultant accuracy of intended movement in deafferented specimens, even if the displacement carried the limb beyond the target.

It was subsequently proposed that the endpoint of the movement was achieved by the specification of a set of length and tension parameters in agonist and antagonist muscle groups. These defined an equilibrium point between agonist and antagonist muscles which correctly positioned the limb in relation to the target. This "mass-spring" view of movement control was first proposed by Bernstein (1967) and later by Crossman and Goodeve (1963). It can be interpreted as a system which displays von Bertalanffy's (1973) principle of equifinality.

While damaging to the Schmidt theory Bizzi et al (1976, 1978) and Polit and Bizzi (1979) viewed the mass-spring as the means of achieving end point location. They suggested that a number of processes, acting in parallel, are responsible for the overall performance of aiming movements. One such process, it was suggested, would be responsible for control of limb velocity. Falkenberg and Newell (1980)

demonstrated that average velocity may be a programmed feature of movement. This gives rise to the possibility that the Schmidt et al theory may only speak to the control process underlying limb velocity.

The Fitts formulation was concerned with the outcome of performance and its relation to the parameters of the movement. The main emphasis was an examination of the outcome of behavior. The Schmidt theory, however, was concerned with identifying underlying control mechanisms of movement and as such was more process oriented. The two theories, while often taken as opposite views of the same problem, can be seen to be completely different in approach and application. The following experiments were designed to examine the fundamental differences between the Fitts (1954) and Schmidt et al (1978, 1979) formulations.

Examination of the reciprocal tapping tasks of Fitts and the single rapid aiming tasks of Schmidt et al resulted in the following differences being identified:

1. In the Fitts' task the independent variables were movement amplitude and target width, while movement time and error rate were dependent variables. In the Schmidt et al paradigm the independent variables were movement amplitude and movement time, while effective target width was the single dependent variable.
2. The reciprocal nature of the Fitts' task confounded errors on tap n with errors on tap $n-1$, and the impulse for stopping tap $n-1$ was the same as that for

starting tap n. Further, visual feedback was used in responses to an unknown degree and changed with the accuracy requirements of the task.

3. The Fitts' task required the subject to attend to two targets, whereas the Schmidt tasks required subjects to monitor only the movement endpoint.

As such, the Fitts' task was bi-phasic in nature and the Schmidt tasks uni-phasic.

It is proposed that the variable application of the Fitts and Schmidt et al formulations may have been due to fundamental task differences which existed between the bi-phasic reciprocal tapping task and the uni-phasic single aiming movement. It is further proposed that such differences were attributable to differential attentional demands of the tasks. Reciprocal tapping involved the monitoring of two targets separated by some distance and thus required the switching of attention between targets. Single aiming, however, involved no peripheral monitoring and consequently all available capacity could be devoted to target acquisition.

The following experiment tested the null hypotheses that, no differences in the means of measured parameters of movement existed as a result of the nature of the uni-phasic and bi-phasic differences between single aiming and reciprocal tapping movements respectively, and, that no differences in the variability of the measured parameters of movements existed as a result of the previously described differences between single aiming and reciprocal tapping tasks.

EXPERIMENT I

An examination of the Fitts and Schmidt methodologies was conducted in order to determine which dependent variables might be used when comparing the two approaches. Appendix 1 (review of literature) gives a review of the Fitts and Schmidt formulations.

In the Schmidt experimentation the single dependent variable was effective target width (W_e). The theory of motor output variability was based, however, on a theoretical relationship between W_e and the magnitude and duration of the accelerative impulse producing the move. Schmidt proposed that variability in target accuracy at a given distance was a result of variability in the time and force production mechanisms in the accelerative phase of movement. The Schmidt methodology unfortunately did not assess either the impulse magnitude or the duration of the decelerative phase of movement. His results and interpretations were based almost completely upon those forces propelling the limb, and not those related to its deceleration. A full examination of the Schmidt methodology resulted in the identification of a number of alternate dependent variables. These were: duration of accelerative impulse and its associated variability, duration of decelerative impulse and its associated variability, magnitude of accelerative impulse and associated variability, magnitude of decelerative impulse and associated variability, and effective target width (W_e).

Examination of the Fitts methodology resulted in the addition of movement time to the list of dependent variables under consideration.

A question of fundamental importance in understanding movement control involves the relationship between initiation and execution

stages of movement. Fitts and Peterson (1964) suggested that perceptual and motor processes could be considered as being independent of each other. Consequently the time required to initiate movement (reaction time minus stimulus processing time) was unrelated to the required accuracy of the movement. Movement time on the other hand, varies according to the required accuracy of movement. Crossman and Goodeve (Note 1) and Keele (1968) attributes this increase in movement time to an increase in the number of within movement corrections that could be required to achieve smaller targets.

The Crossman and Goodeve (Note 1) and Keele (1968) theories depended on the monitoring of sensory feedback. Schmidt supported the notion that whole movements could be organized or programmed in advance and executed without need for feedback information. Furthermore rapid single movements could be completed in times short enough (i.e. less than 200 msec) to prevent the utilization of feedback information. More exacting movements, such as aiming movements requiring higher degrees of accuracy, could require a more precise program. Initiation time would therefore increase with the increased accuracy demands. Henry (1960) was able to demonstrate that initiation time did in fact vary in response to movement complexity. Further, Glencross (1972), and Norrie (1974) demonstrated that movements requiring a pause and reversal of direction on a definite target, in route to a final target require longer initiation times than simple forward movements. Reaction time was therefore added as the final variable of interest to be used in the comparison between single rapid aiming and reciprocal tapping movements. The former

being considered to be programmed in advance and the latter dependent upon feedback information for error correction.

The eight dependent variables in the following experiment were: reaction time, duration and variability of accelerative impulse, duration and variability of decelerative impulse, magnitude and variability of accelerative impulse, magnitude and variability of decelerative impulse, distance moved prior to correction, i.e. a standard deviation specifying the target width (W_e), distance moved following correction, and total movement time.

In order to compare the Schmidt and Fitts' formulations the following movement conditions were established which differed only in their mode of initiation. Condition One; involved a simple reaction time task followed immediately by a rapid aiming movement to a specified target. The reaction time task was used to control the subject's attention by forcing him to attend to an auditory stimulus. In Condition Two, a reciprocal aiming task was developed which required a single movement away from the body mid-line to a peripheral target; followed immediately by a rapid return aiming movement to acquire a specified target. This second phase of the reciprocal aiming task was considered to be identical to the rapid aiming movement specified under the first condition. A single rapid aiming movement, without a preceding reaction time task was used in Condition Three. The subject initiated the movement when he felt prepared to do so.

These three conditions were established for the following reasons. Conditions One and Three were identical single aiming movements of the Schmidt variety which differed only in their demands

on attention. Condition One required attention to be directed towards an auditory stimulus while Condition Three did not. A comparison of these movements was in effect a comparison based upon differences in attention demands of each condition. Condition Two a Fitts type of task; embodied both the rapid aiming movements used in Conditions One and Three and an initial outward movement to a peripheral target; an important feature of reciprocal tapping. This condition required attention to be directed towards a peripheral physical stimulus and also a planned reversal of movement direction.

The three established conditions described a continuum of movement requirements. Condition Three, a single rapid aiming movement with no demand on attention, Condition One, a single rapid aiming movement with some demand on attention, and Condition Two, a rapid aiming movement following a planned reversal of movement direction requiring attention to be directed towards a physical stimulus which corresponded to the point at which the planned reversal had to take place.

The three conditions embodied all of the features of single aiming and reciprocal tapping movements allowing a comparison of such movements to be conducted.

Method

Subjects

Thirty male subjects, students at the University of Alberta, ranging in age from 19 to 32 years, volunteered for the experiment. All subjects wrote with their right hands.

Apparatus and Task

A PDP 11/10 computer was employed to control the experiment and collect data. The interaction between the apparatus and computer is shown in figure 1. The computer was used to control an auditory tone which acted as an event indicator to the subjects. The tone was activated by the computer by closure of a solid state switch via a signal from the computer's digital to analog converter. This switch activated an EICO audio wave generator to produce the tone. The computer was also employed to collect analog data from an accelerometer and potentiometer. These devices were connected to the A/D (analog to digital) channels of the computer. Analog data was subsequently digitized and stored on floppy disks.

Three target lights, Leecraft 3200 amber snaplights, were embedded in a plywood board which was first covered with heavy black paper and then overlaid with $\frac{1}{4}$ inch household window glass. The effect was to give three target lights which appeared as orange strip lights approximately 0.2 cm in width. The three lights were separated from a 1 cm wide metal start plate by distances of 10, 20 and 40 cm respectively. The three target lights could be individually controlled by the experimenter.

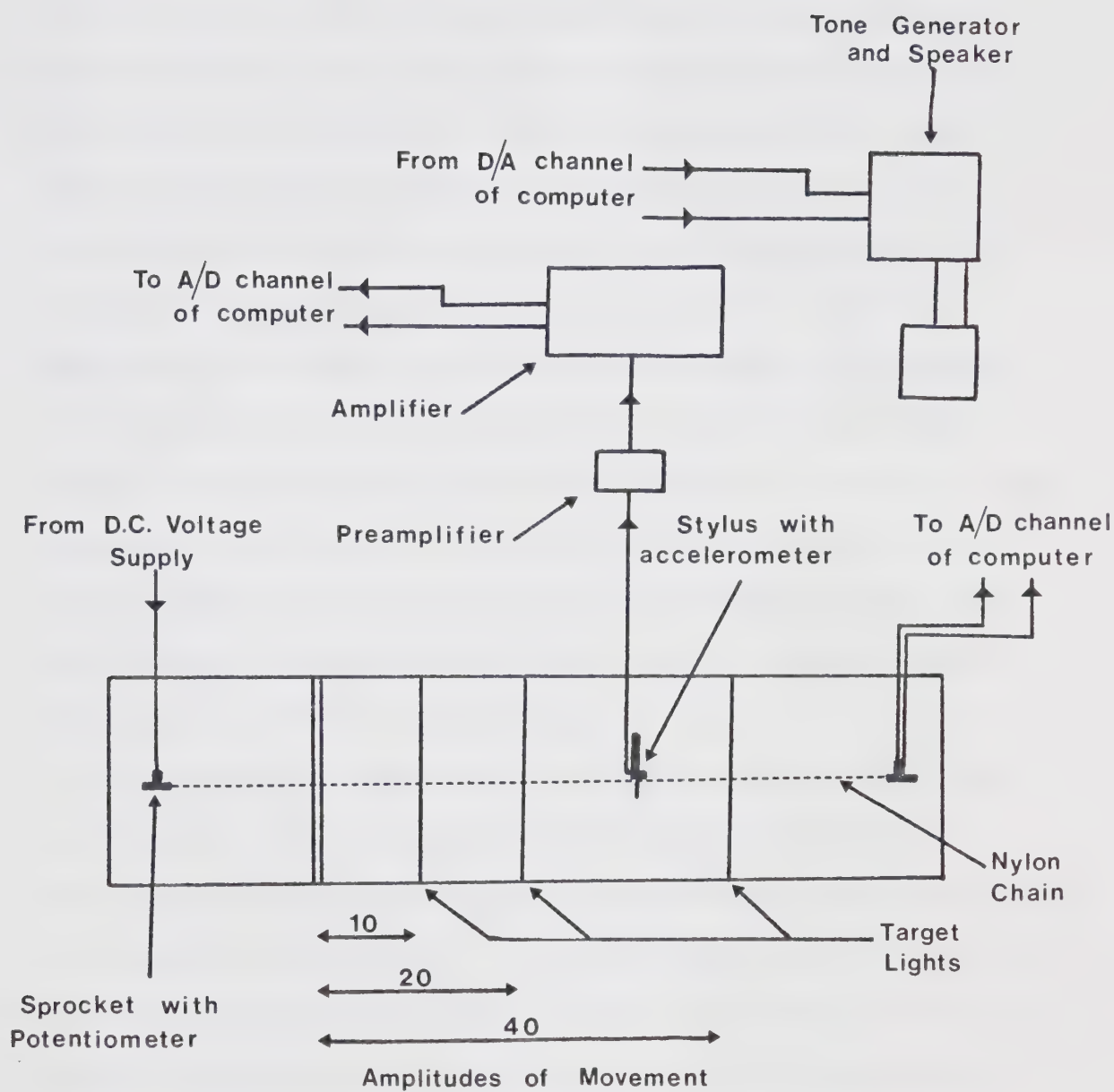


Figure 1.

Plan of Apparatus and Interface
with Computer

Two lightweight brass sprockets were mounted individually upon the spindles of two 10 Kohm ten turn potentiometers. The potentiometers were mounted on the table 100 cms apart from each other. They were situated centrally over either end of the plywood board. The potentiometers were mounted on uprights approximately 5 cm above this board allowing it to move freely beneath them. An Eveready heavyduty 6 volt battery was connected to the potentiometers. Only the output of one of the potentiometers was used as a source of analog signal for transmission to a digital channel of the computer.

A continuous nylon ladder chain ran between the two brass sprockets. Linear movements of the nylon chain caused rotation of the potentiometer spindles and a resultant change in resistance. Since the potentiometers were linear, movement of the nylon chain caused linear changes in output voltage. These changes in output voltage were sampled at a rate of 500 values per second.

A metal stylus, approximately 15 cm in length was fixed to the lower segment of the nylon chain. A piezoelectric accelerometer (Bruel and Kjaer Type 4332) was mounted on the stylus. The accelerometer was attached to a preamplifier (Bruel and Kjaer, Type 2616) which was mounted on the back of the subject's chair at the level of the shoulder. Output from the preamplifier was fed to a power amplifier (Hewlett Packard Type 467A). Output from that amplifier was then fed into a second A/D channel of the computer. Movements performed by displacing the stylus in the lateral plane, were therefore converted into voltage equivalents by the accelerometer and potentiometer and then digitized by the computer for immediate storage and eventual

analysis.

An inclined wooden screen was fitted to the bench on which the equipment sat. The screen was of such length as to prevent subjects from viewing their arms or the equipment to the right of a line drawn perpendicular to the subject's mid-line. Since target lights could be illuminated individually and the position of the plywood board adjusted freely, the experimenter could make the target light visible to the subject while at the same time obscuring the start plate and right limb. Target lights corresponding to the amplitude of movement desired could be illuminated and correctly positioned by the experimenter relative to both screen and subject.

The task in Condition One required the subject to respond to an auditory signal by performing a single rapid aiming movement in the lateral plane. The movement, from initiation to target acquisition, was to be completed as rapidly and accurately as possible following the tone.

The subject was seated approximately eight inches from the bench such that the mid-line of the subject's body was directly opposite the target light. The metal stylus was fitted to the subject's right hand by taping it between the index and forefingers. The stylus was then attached to the nylon ladder chain and the subject positioned its tip on a cross point embossed into the metal start plate. The subject was allowed to view beneath the screen to acquire the cross point but following this was instructed to return to an upright position, in which only the target light was visible.

The computer was programmed to give a clearly audible tone of

500 msec duration signifying that a trial could begin. When the subject felt he was ready he depressed a small switch with his left hand. After a three second delay following depression of the switch the computer gave a second long tone of 500 msec duration which, the subject was instructed, was a warning tone. The computer was programmed to create a random delay of between 500 and 3,500 msec following the warning tone. Following this delay the computer gave a signal of 50 msec duration which was the subject's signal to initiate his response. The subject was previously instructed that upon receiving this signal he was to move as rapidly and accurately as possible from the start plate to come to rest above the illuminated target without coming into contact with the glass.

On initiation of the signal tone the computer was programmed to sample and store the incoming data from the accelerometer and potentiometer. Sampling occurred asynchronously at a rate of 1000 samples per second. Sampling lasted for 1000 msec, thereby providing 500 samples from the accelerometer and 500 from the potentiometer. Following a variable delay not exceeding 8000 msec during which acquired data was stored by the computer, the above procedure was repeated again. Subjects were given ninety such trials, divided into sixty training trials followed by thirty test trials.

The task in Condition Two required the subject to perform a rapid aiming movement to a target following the acquisition of a second target situated to the subject's right. The aiming movement required the subject to return, as fast and accurately as possible to the start position following the acquisition of the second target.

Subjects in Condition Two were seated as in Condition One and the stylus taped between the index and forefingers of the right hand. The subject began a trial by positioning the stylus on the glass directly on the target light. Following a 500 msec tone from the computer, the subject moved the stylus along the glass to the right until a change of context was perceived indicating contact with the start plate (this change of context was extremely obvious to the subject). Contact with the start plate was the signal that the subject was to move as rapidly and as accurately as possible back to the target light without contacting the glass.

The metal start plate and stylus were so arranged that contact between the stylus and the plate acted as the closure of a switch. Upon closure of this switch the computer began to sample for 1000 msec from the accelerometer and potentiometer. Following a delay during which sampled data was stored by the computer a second tone of 500 msec duration was given indicating the start of a new trial. Subjects were again given sixty training followed by thirty test trials.

The task in Condition Three required the subjects to perform a single rapid aiming movement to an illuminated target. This movement was self initiated by the subject.

Subjects were seated as in Conditions One and Two, with the stylus once again taped between the index and forefingers of the subject's right hand. The subject positioned the stylus so that it rested lightly upon the metallic start plate. The subject was allowed to view beneath the screen to position the stylus correctly, but

once this was completed the subject was instructed to return to an upright position in which only the target light was visible. The computer was programmed to give a 1000 msec tone indicating that a trial could commence. The subject initiated a trial by pressing the stylus down firmly upon the metallic start plate. This action closed the switch lying beneath the start plate and caused the computer to commence sampling. The subject then moved as rapidly and accurately as possible to stop above the target light without coming into contact with the glass. Following a variable delay period not longer than 8000 msec during which sampled data was stored by the computer, a second tone of 1000 msec was given to indicate that a further trial could begin. Subjects were given sixty training followed by thirty test trials.

Ten subjects were randomly assigned to each treatment condition. Subjects in each condition were tested under all amplitudes, namely 10, 20, and 40 cm. The order for testing for amplitude was decided randomly, however, once this order was decided all subjects were tested in this order. The order for testing for amplitude was 20 cm, 10 cm, and 40 cm. The thirty subjects were tested at their convenience. Subjects were, however, tested only once per day to avoid fatigue effects.

Design

10 subjects were randomly assigned to each of the three treatment conditions, Condition One, Condition Two, and Condition

Three. Results were analysed using a three way factorial repeated measures design. The number of levels of the three factors were; 3 (treatment condition) X 3 (amplitude of movement) X 20 (trials). Following this analysis standard deviation data for each subject performing under each amplitude of movement were submitted to a two way factorial repeated measures analysis of variance. The number of levels of the two factors were; 3 (treatment condition) X 3 (amplitude of movement).

Data Analysis

On completion of the 30 test trials the computer indicated the end of the test session by giving four short tones. The computer was further programmed to analyse the stored digital data. Appendix B gives a graphical representation of the digital data collected during a single trial. The diagram shows how this data was used to obtain measures on the dependent variables of interest. Data from the potentiometers was used in the calculation of displacements and gave, therefore, distances moved prior to and following corrections. The accelerometer was used in the calculation of the magnitudes and durations of the impulsive forces as well as total movement time.

Only the first 20 acceptable trials from each test session were submitted to statistical analysis. Trials were considered to be unacceptable for the following reasons; responses were initiated prior to the required signal, movements were completed after the end of the computer sampling period and were not, therefore,

completely sampled, subjects failed to respond to the signal, movements were performed at such speed that they failed to provide suitable acceleration data for analysis by the computer, these movements were not felt to have been performed as fast as possible.

Results and Discussion

Table 1 is a summary of the results of the three way factorial repeated measures analysis of variance performed on data obtained for each of the dependent variables in Experiment One. Table 2 is a summary of the results of the two way factorial repeated measures analysis of variance performed on standard deviation data obtained from Experiment One. For the purposes of the current discussion major consideration will be given to the variables of effective target width (standard deviation of distance moved prior to correction), variability of impulse duration (standard deviation of duration of accelerative impulse) and reaction time.

The major prediction of the Schmidt et al (1978, 1979) theory of motor output variability related variability of impulse duration to effective target width, W_e . The theory proposed that as variability in impulse duration increased there would be a proportional and linear increase in W_e . Examination of the results from the current experiment showed a significant main effect for treatment condition on the variable, variability of impulse duration, $F(2,27) = 7.74$, $p < .01$. No significant main effect for treatment condition was obtained for the variable, effective target width. For the main effect of amplitude, significant differences were obtained for the dependent variable effective target width, $F(2,54) = 1479.94$, $p < .000$, but no significant differences were obtained for variability of impulse duration.

Neither of these results would be predicted by the Schmidt theory. According to the theory, significant differences between

Table 1

F ratios obtained from the three way analysis of variance performed on raw data for each dependent variable of Experiment One.

| Dependent Variable | Treatment Condition (C) | Amplitude (A) | C X A | Trials (T) | C X T | A X T | C X A X T |
|------------------------------------------|-------------------------|---------------|-------|------------|-------|-------|-----------|
| Reaction Time | 22.00* | 3.00 | 2.31 | 1.25 | 1.02 | 0.92 | 0.95 |
| Time of Acceleration | 5.94* | 46.05* | 0.69 | 0.97 | 0.72 | 1.08 | 0.81 |
| Time of Deceleration | 4.84* | 8.21* | 0.18 | 0.34 | 1.23 | 0.91 | 0.86 |
| Distance moved prior to correction | 0.93 | 1479.90* | 0.18 | 1.25 | 0.91 | 1.15 | 0.11 |
| Distance moved following correction | 0.55 | 7110.10* | 1.45 | 0.53 | 0.50 | 1.19 | 1.33 |
| Magnitude of accelerative impulse | 7.74* | 60.32* | 1.01 | 1.19 | 1.03 | 1.21 | 1.16 |
| Magnitude of decelerative impulse | 1.72 | 31.22* | 0.21 | 0.56 | 0.79 | 0.84 | 0.77 |
| Movement Time | 4.95* | 19.08* | 0.54 | 0.57 | 1.01 | 0.71 | 0.96 |

*

* indicates probability < .05

Table 2

F ratios obtained in analysis of variance
performed on standard deviation data
for each dependent variable in Experiment One.

| Dependent Variable | Treatment Condition (C) | Amplitude (A) | C X A |
|------------------------------------------------------------------|-------------------------------|------------------|-------|
| Standard deviation of duration of accelerative impulse. | 5.83* | 2.248 | 0.58 |
| Standard deviation of duration of decelerative impulse. | 4.90* | 0.062 | 0.41 |
| Standard deviation of magnitude of accelerative impulse. | 2.04 | 9.482* | 0.13 |
| Standard deviation of magnitude of decelerative impulse. | 1.37 | 4.981* | 0.49 |
| Standard deviation of distance moved prior to correction. | 0.12 | 26.532* | 0.95 |
| Standard deviation of distance moved following correction. | 0.23 | 20.926* | 0.55 |

* indicates probability < .05

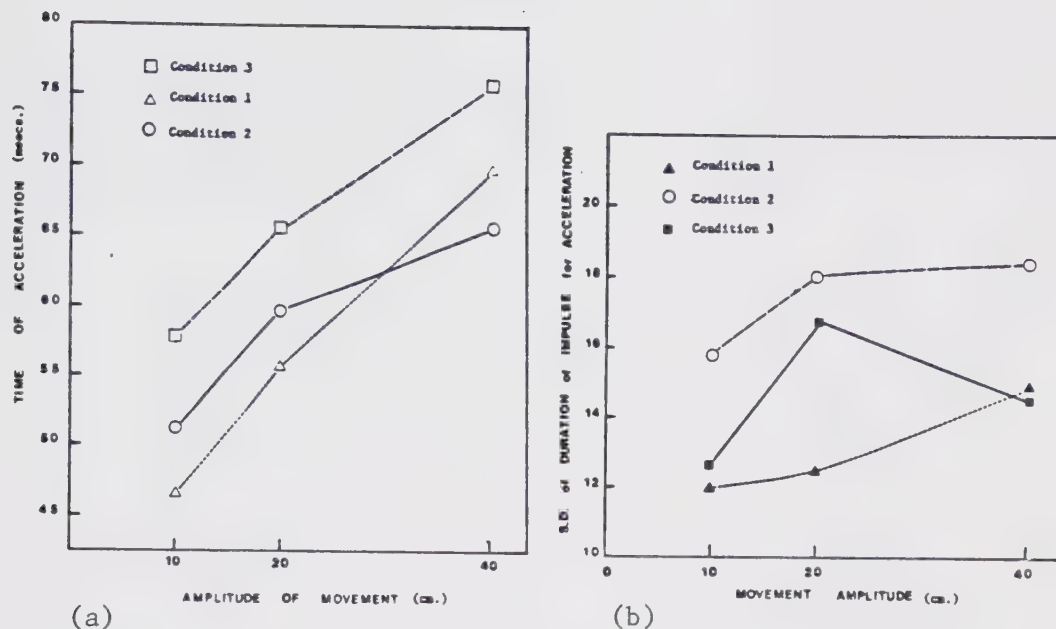


Figure 1. Mean (a) and standard deviation (b) of duration of accelerative impulse as a function of amplitude and treatment condition

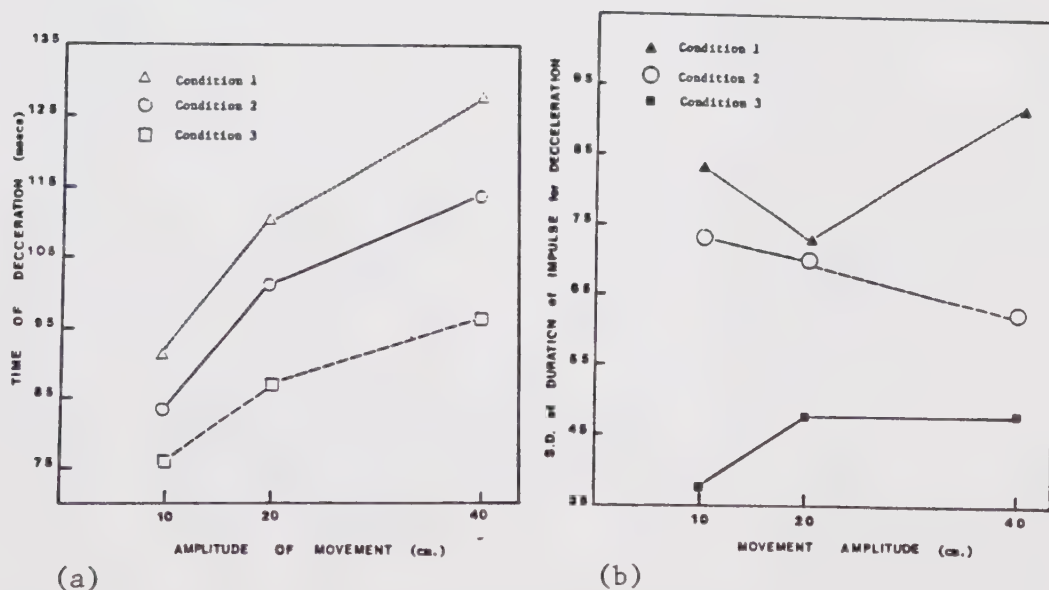


Figure 2. Mean (a) and standard deviation (b) of duration of decelerative impulse as a function of amplitude and treatment condition.

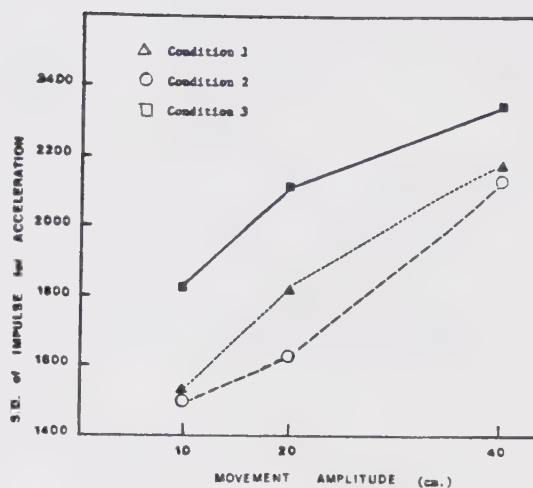
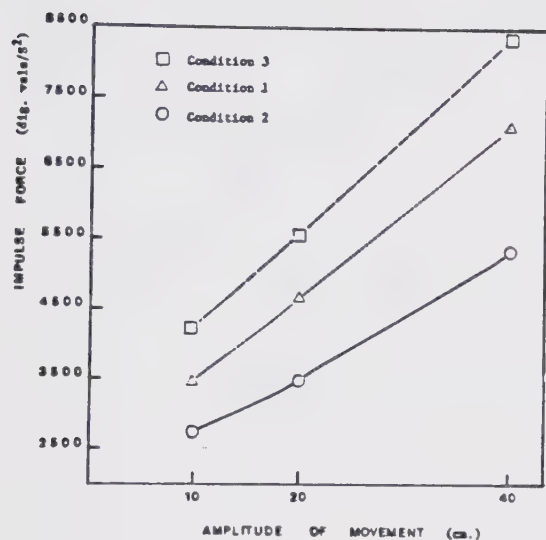


Figure 3. Mean (a) and standard deviation (b) of magnitude of accelerative impulse as a function of amplitude and treatment condition.

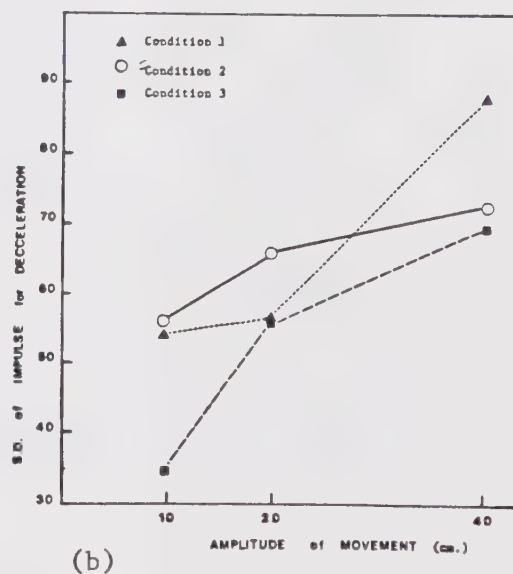
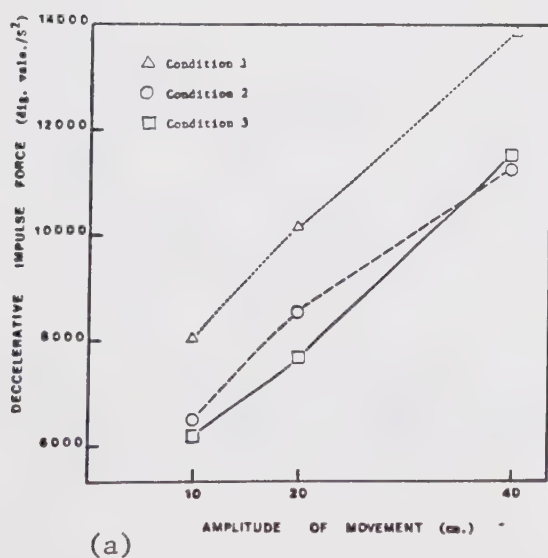


Figure 4. Mean (a) and standard deviation (b) of magnitude of decelerative impulse as a function of amplitude and treatment condition.

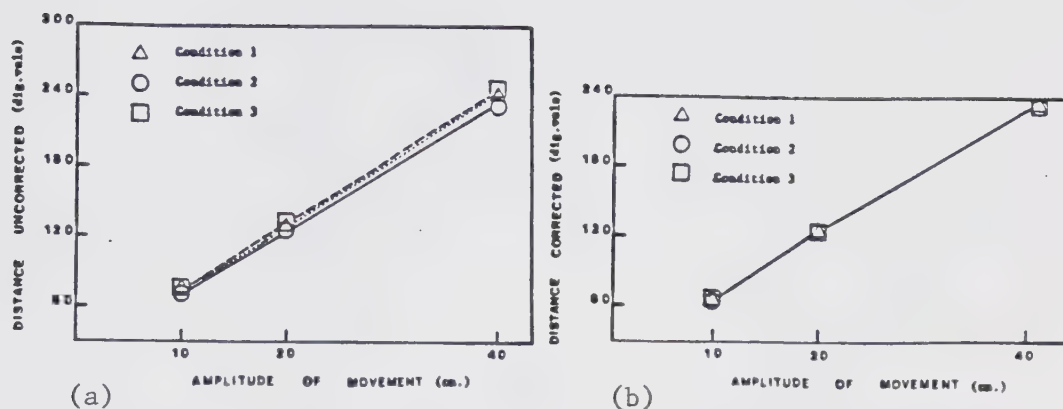


Figure 5. Mean distance moved prior to (a) and following (b) correction as a function of amplitude and condition.

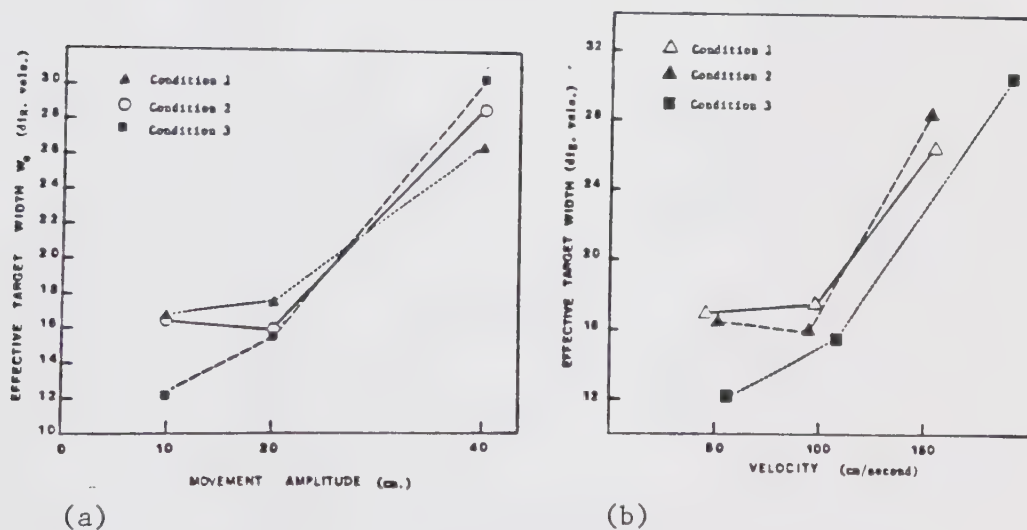


Figure 6. Effective target width as a function of movement amplitude and treatment condition (a) and movement amplitude and velocity (b).

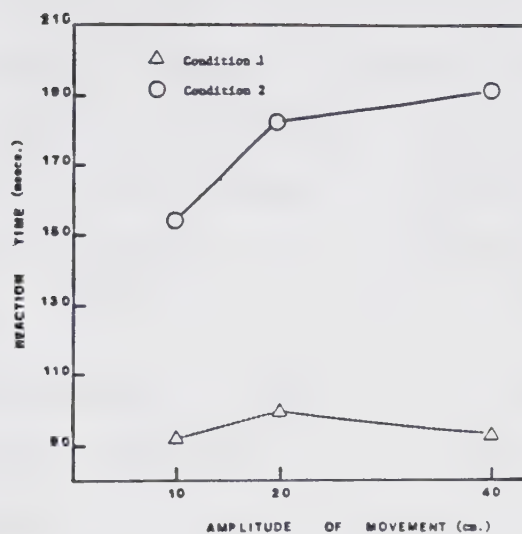


Figure 7. Reaction time as a function of amplitude for Conditions One and Two.

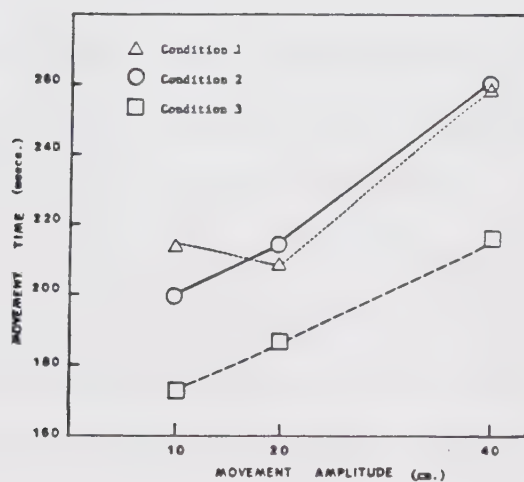


Figure 8. Movement time as a function of amplitude and treatment condition.

treatment conditions on the variability of impulse duration should have been accompanied by similar differences between treatment conditions for effective target width. Similarly within conditions, as amplitude increased, increases in effective target width should have been accompanied by a proportional increase in the variability of impulse duration. Neither of these results was obtained in the current experiment and therefore the experiment failed to support Schmidt's theory.

Fitts' (1954) theory predicted that as movements of a fixed amplitude were speeded there would be an increase in the variability of movement endpoint, W_e . Results of the current experiment demonstrated a significant main effect for treatment condition on the dependent variable movement time $F(2,27) = 4.95, p < .05$. Movements in the self-initiated condition (Condition Three) were performed significantly faster than movements in conditions One and Two. There was, however, no main effect for treatment condition on the dependent variable effective target width. This finding was contrary to the prediction of the Fitts' theory which would have required an increase in effective target width as movements became faster. It would appear in the current experiment that the mode of movement initiation affected the resultant accuracy and speed of movement. Self-initiated movements with limited attentional demands could be performed more rapidly than but with equal accuracy to movements requiring a response to a tone or a planned reversal of direction (Conditions One and Two respectively).

Figure 6(b) shows effective target width plotted as a function

of movement velocity and treatment condition. No significant increase in effective target width was observed when movement velocity increased from 50 to 100 cm per second. A significant increase in effective target width was observed when movement velocities increased from 100 to 150 cm per second. In the first case both amplitude and velocity of movement were increased with no significant increase in W_e . These results suggested that effective target width did not increase until subjects operated at velocities which put them above the capacity of the motor system. It could be suggested that single aiming movements could be performed at greater velocities than reciprocal movements while maintaining the same degree of accuracy because less capacity had to be devoted to the monitoring of stimulus events. It could be suggested that Fitts' law holds in conditions in which subjects are performing at or beyond the capacity of the motor system while the Schmidt formulation would hold under conditions where subjects were operating below capacity. The performance of single aiming movements which required attention to be directed towards an extraneous stimulus event should by the previous argument, closer approximate performance of movements requiring planned reversals such as those in Condition Two, than the self-initiated movements of Condition Three. While insufficient data points are available figure 6 (b) lends some support to the previous argument. Condition Three (self-initiated single rapid aiming movement) demonstrates a near linear increase in effective target width with movement velocity while Conditions One and Two may well demonstrate logarithmic increases in effective target width with movement velocity.

The foregoing discussion is based on the assumption that within treatment conditions requiring response to a stimulus (Conditions One and Two) there was no trade off between complexity of movement, as represented by amplitude of movement, and reaction time. Henry et al (1960) proposed that the time required to program a movement, as reflected by reaction time, increased as the complexity of the movement increased. Analysis of variance performed on reaction time data from the current experiment showed no significant main effect for amplitude. Subjects did not take longer to plan movements of greater amplitudes. Data obtained for other dependent variables could not be attributed to subjects adopting a trade off strategy in which programming time was increased for longer amplitude movements. Observed differences on the dependent variables measured could more safely be attributed to the experimental manipulation which required attention to be directed towards particular stimulus events.

A significant main effect for treatment condition was obtained for reaction time $F(2,27) = 22.0, p < .05$. Reaction times for Condition Two were significantly longer than those for Condition One. Henry et al (1960) would suggest that this reflected the greater complexity of movements requiring a planned reversal of direction. This increased reaction time did not result in a more complete programming of the return aiming movement. Figure 5 (a) and (b) show that increased planning time in Condition Two did not result in greater accuracy of movement. Analysis of variance showed no significant main effects or interactions for the variables distance moved prior to correction or distance moved following correction.

Figure 3 (a) and (b) show the magnitude and variability of impulse for acceleration. Condition One shows greater accelerative impulse with greater associated variability than condition two. This is reflected in a significant difference obtained in analysis of variance for the dependent variable movement time for the main effect of treatment condition, $F(2,27) = 4.95$, $p < .05$. A similar result was obtained for the dependent variable decelerative impulse force. A significant main effect was obtained for the main effect of amplitude $F(2,54) = 31.22$, $p < .05$. Figure 4 (a) shows near linear increases in decelerative impulse for all conditions as a function of amplitude of movement. While no significant main effect for treatment condition was obtained it was interesting to note that Condition Three while demonstrating the largest accelerative impulses (figure 3) demonstrated the smallest decelerative impulses. This may be due to the more complete programming which may have taken place because no attention was required to be directed to any extraneous events. Figures 1 and 2 show that not only was the magnitude of accelerative impulse greatest for Condition Three it acted over the longest time of the three conditions while the decelerative impulse as well as being the smallest of all conditions also acted over the shortest time. These two results also seem to support the notion that more complete programming took place for movements performed by subjects in Condition Three.

In conclusion, the current experiment provided evidence to support the theory that single aiming and reciprocal tasks differ in their organization. The differences would appear to be related to the discrepant attentional demand between the three movement classes

examined. One explanation would be that increased demands on attention resulted in decreased capacity for movement programming. The effect on programming of decreased capacity was not reflected in increased variability of movement endpoint. Accuracy of movement was maintained in all conditions while parameters related to movement velocity were effected. It would appear that rapid movements can be performed with the same accuracy as slow movements providing the attentional demands in the slow movement case were severe. If this was the case then the performance of reciprocal tasks such as those in Condition Two should vary according to the demands placed on attention by the task. As the attention demanded by the point of reversal is increased, perhaps by making the target plate at that point narrower, then the characteristics of the return aiming movement should be altered. According to the foregoing argument these changes should not be related to the effective target width, effective target width should be maintained for movements of equal amplitude regardless of demands placed on attention. Rather, the effect should be noted on parameters relating to the velocity of the movement. A second experiment was conducted to examine and test this prediction.

EXPERIMENT 2

Experiment One provided some evidence to support a tentative theory that single rapid aiming tasks and tasks of a reciprocal nature differed in their organization. The observed differences in the measured parameters between the two classes of movement appeared to be dependent upon the amount of attention subjects were required to direct towards events other than the aiming response. Acquisition of the peripheral plate in Condition Two and attending to the stimulus tone in Condition One appeared to demand capacity. Reductions in the capacity available for formulating the movement response did not lead to a reduction in accuracy of movement. Rather, differences were observed in factors relating to speed of movement. It was subsequently suggested that Fitts' law may hold under conditions in which subjects are required to operate beyond the limited capacity of the human motor system. Similarly it was proposed that the Schmidt formulation held under conditions in which the subjects operated below the limited capacity of the motor system.

The foregoing argument suggested that in reciprocal tasks subjects were required to attend to targets which marked the points of reversal in the movement task. Because attention was demanded by the points of reversal, reduced processing capacity was available for the formulation of the subsequent response. The effect on performance was not reflected in a reduction in accuracy but rather in factors related to movement speed such as magnitude of accelerative impulse. It was proposed, therefore, that reduction in attention demanded at the points of reversal in a reciprocal task would result in movements of increased velocity but not increased accuracy.

Experiment Two was an attempt to manipulate the attention required to be directed to the points of reversal in an aiming task which required a planned reversal of movement direction. This was accomplished by manipulating the width of a peripheral target plate which represented the point at which reversal of the movement was required. It was hypothesized that as the width of the reversal plate increased so the subject would be required to devote less attention to its acquisition. Greater processing capacity would be available for planning and execution of the return movement following acquisition of the reversal point. The result of decreases in the attention devoted to the peripheral plate would be return movements of increased velocity. All movements, regardless of the attention demanded by the point of reversal, which was theorized to be dependent upon its width, would be performed with equal accuracy. It was further hypothesized that as demands on attention were reduced, performance of the aiming response in a reciprocal task would more closely approximate that of a single aiming response.

The question of interest in the current experiment related to the effect of attentional demand on performance of aiming movements requiring a planned reversal of movement direction. Performance was assessed by measurements obtained on the eight dependent variables detailed in Experiment One. Since attention demand in the task was thought to be dependent on the width of the plate representing the point of movement reversal, movements in the following experiment had to be visually guided.

Method

Subjects

Five male subjects, students of the University of Alberta, ranging in age from 21 to 29 years, volunteered for the study. All subjects wrote with their right hands.

Apparatus and Task

A number of modifications were made to the apparatus described in Experiment One. The screen which prevented subjects from viewing the course of movements was removed in order to allow for visually guided movements. The peripheral start plate which acted as the starting point for all movements was also removed. Three metal plates were constructed of widths 10, 20, and 40 mm respectively. These plates could be inserted by the experimenter into the position previously occupied by the peripheral start plate. When any of the plates were in position, the distance between the centre line of the plate and the three target lights remained 10, 20, and 40 cm. There were, therefore, nine possible combinations of peripheral target width (PTW) and amplitude of movement.

The task in Experiment Two required the subject to perform a visually guided single rapid aiming movement to a visually illuminated target following the acquisition of a metal plate situated to the right of the target light. This task required a planned reversal in movement direction at a predetermined point prior to the acquisition of the target.

A PDP 11/10 digital computer was used to control the experiment.

The interaction between the apparatus and the computer was identical to that described in Experiment One Condition Two. The computer was used to control an auditory tone which acted as an event indicator to the subjects. The tone was activated by the computer by closure of a solid state switch via a signal from the digital to analog channel of the computer. This switch operated an EICO audio wave generator to produce the clearly audible required tones.

The subject was seated for each test session as in Experiment One such that the mid-line of the subject's body was aligned with the target light. Prior to the arrival of the subject, the experimenter selected the appropriate amplitude of movement and width of peripheral plate and adjusted the equipment accordingly. The stylus, bearing the accelerometer, was taped between the index and forefingers of the subject's right hand. The stylus was attached to the lower segment of the nylon ladder chain and this arrangement allowed for movements only in the lateral plane. The subject was instructed that each trial would begin with the stylus resting lightly upon the target light.

The computer was programmed to give a long tone of 1000 msec duration to indicate that a trial was to begin. After a fixed period of 3000 msec the computer was programmed to give a tone of 500 msec duration which acted as a warning tone. After a delay of 500 msec a very short tone of 50 msec duration sounded to indicate to the subject that the movement out to the peripheral plate was to begin.

Speed of movement out to the peripheral plate was controlled by a further tone which acted in metronome fashion. The subject was instructed that his movement to the peripheral target plate should

be evenly paced and in time with the pacing tone. This provided a relatively constant velocity of movement to the periphery for all amplitudes of movement since the duration of the pacing tone was proportional to the amplitude of the movement, 250 msec for 10 cm movements, 500 msec for 20 cm movements and 1000 msec for 40 cm movements. Upon initiation of the pacing tone subjects began the horizontal movement to the right towards the peripheral target plate.

Upon contact with the peripheral plate the subject was instructed to move as fast and accurately as possible to a position above the target light without coming into contact with the surface. Contact between the stylus and the peripheral plate acted as an event indicator to the computer. The computer commenced sampling data from the accelerometer and potentiometer for 1 second at a rate of 1000 samples per second.

Upon achieving the target the subject was instructed to remain there until the computer issued a further long tone indicating that the next trial would begin following a delay interval. During the delay the computer stored collected data for later analysis.

All subjects received 60 training trials followed by 30 test trials. Subjects were tested under all combinations of amplitude and peripheral plate size giving a total of 9 test sessions per subject. The order of testing for each subject was decided randomly by drawing the 9 combinations from a hat. Subjects were tested once per day for 9 days.

The 5 subjects were tested under all combinations of amplitude and peripheral target width. Mean and standard deviation data were submitted to a two-way factorial repeated measures design with repeated measures on both factors. The levels of the two factors were; 3 (amplitude) X 3 (peripheral target width). Of the 30 test trials the first 20 acceptable trials were submitted for analysis. A trial was considered unacceptable for the following reasons; the subject failed to make contact with the peripheral plate, the subject failed to complete the aiming response within the sampling time of the computer, movements were performed at such speed that they failed to provide suitable acceleration data for analysis by the computer, these movements were not felt to have been performed as fast as possible, the subject failed to respond to the pacing tone and did not move to the periphery.

Table 3

F ratios obtained from analysis of variance
performed on mean data obtained for each
dependent variable in Experiment Two

| Dependent Variable | Amplitude (A) | Peripheral Target Width (PTW) | A X PTW |
|----------------------------------------|------------------|-------------------------------------|---------|
| Reaction Time | 2.10 | 1.129 | 1.816 |
| Duration of accelerative impulse | 18.915* | 5.985 | 1.344 |
| Duration of decelerative impulse | 7.029* | 1.137 | 2.820 |
| Movement Time | 5.213* | 1.232 | 0.578 |
| Magnitude of accelerative impulse | 45.920* | 2.789 | 1.481 |
| Magnitude of decelerative impulse | 6.864* | 1.746 | 3.252* |
| Distance moved prior to correction | 159.290* | 3.102* | 2.928 |
| Distance moved following correction | 239.430* | 1.813 | 2.403 |

* indicates probability < .05

Table 4

F ratios obtained from analysis of variance
performed on standard deviation data obtained
for each dependent variable in Experiment Two

| Dependent Variable | Amplitude (A) | Peripheral Target Width (PTW) | A X PTW |
|----------------------------------------------------------------|------------------|-------------------------------------|---------|
| Standard deviation of duration of accelerative impulse | 1.276 | 2.375 | 2.039 |
| Standard deviation of duration of decelerative impulse | 5.539 | 1.746 | 2.215 |
| Standard deviation of magnitude of accelerative impulse | 4.680* | 3.47 | 1.87 |
| Standard deviation of magnitude of decelerative impulse | 6.53* | 1.16 | 2.24 |
| Standard deviation of distance moved prior to correction | 11.960* | 5.05* | 2.44 |

* indicates probability < .05

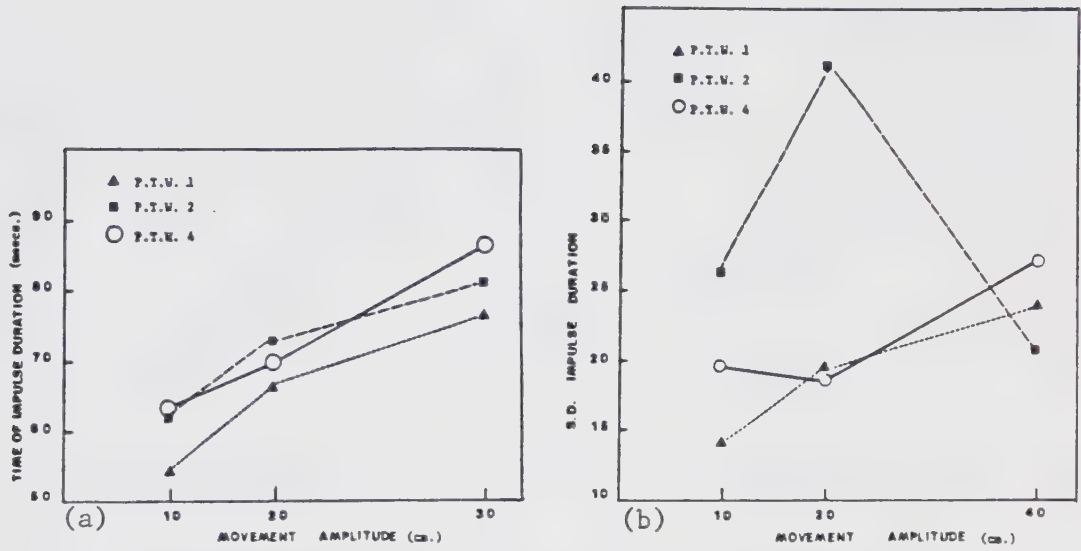


Figure 9 Mean (a) and standard deviation (b) of the duration of impulse for acceleration as a function of amplitude and peripheral target width (PTW).

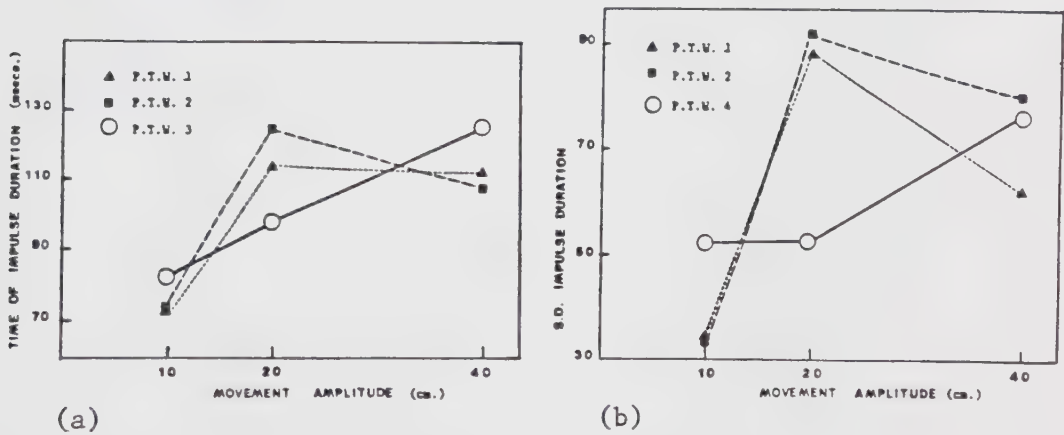


Figure 10 Mean (a) and standard deviation (b) of the duration of impulse for deceleration as a function of amplitude and peripheral target width.

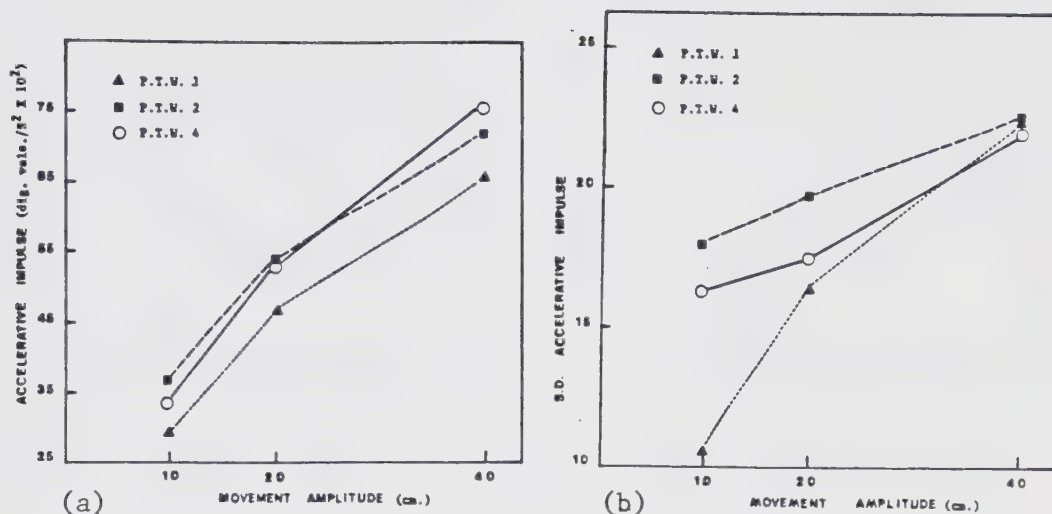


Figure 11 Mean (a) and standard deviation (b) of magnitude of impulse for acceleration as a function of amplitude and peripheral target width.

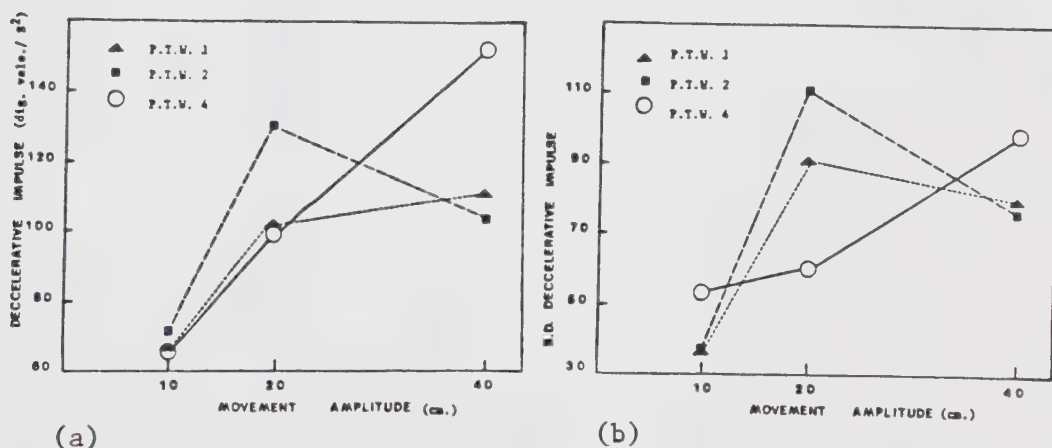


Figure 12 Mean (a) and standard deviation (b) of magnitude of decelerative impulse as a function of amplitude and peripheral target width.

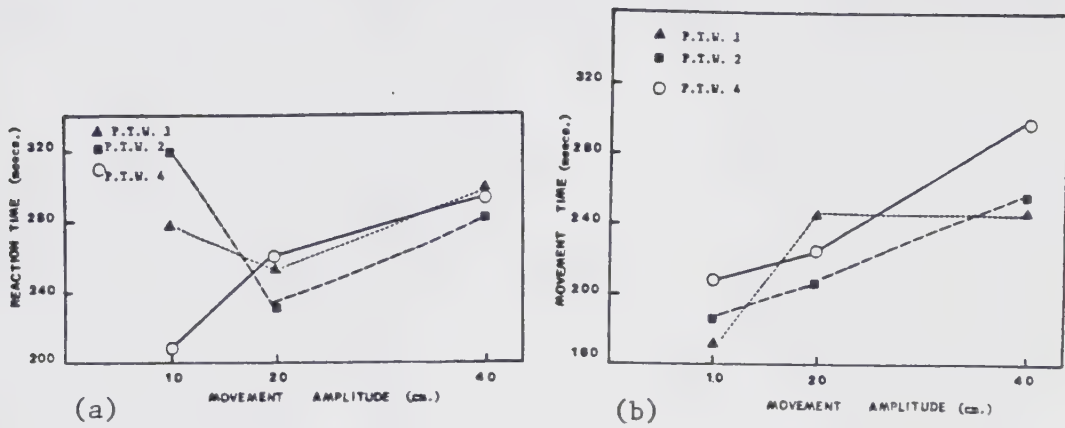


Figure 13 Reaction time (a) and Movement time (b) as a function of amplitude and peripheral target width.

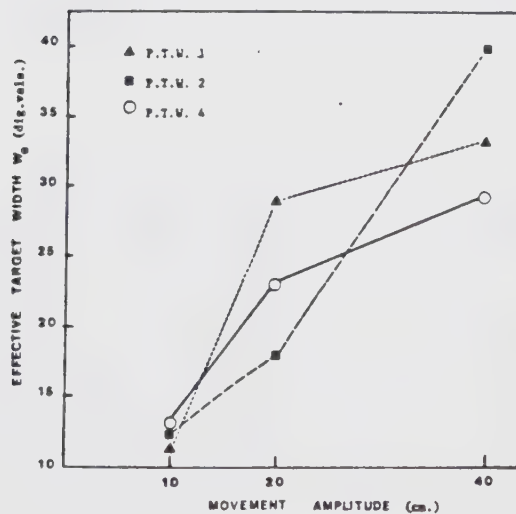


Figure 14 Effective Target Width as a function of amplitude and peripheral target width.

Results and Discussion

Tables 3 and 4 show the results of the two-way factorial repeated measures analysis of variance performed on mean and standard deviation data obtained from Experiment Two.

Figure 7 shows reaction time data for Conditions One and Two of Experiment One. The significant main effect of treatment condition was taken as an indication of differences in task complexity between Conditions One and Two. Henry (1960) and Klapp (1975) reported that more complex movements required increased processing time. In the current experiment no significant main effect or interaction was obtained for the dependent variable reaction time. For movements of fixed amplitude the manipulation of peripheral target width appeared not to increase the complexity of the response. The expected effect on attention of reducing the width of the peripheral plate did not take place.

Figure 14 presents effective target width (standard deviation of distance moved prior to correction) as a function of amplitude of movement and peripheral target width. Analysis performed upon this data demonstrated a significant main effect for both amplitude $F(2,8) = 11.96$, $p < .05$ and peripheral target width $F(2,8) = 5.04$, $p < .05$. Based on the findings from Experiment One it was proposed that no such differences in effective target width would be observed as a function of the manipulation of peripheral target width. Such a proposal could not be supported by the data obtained here. One reason for this failure may have been that no effort was made to observe whether or not the subjects made errors in reaching the peripheral target plate prior to

initiation of the rapid visually guided movement to the target. As a result of the failure to partition the errors, the distance moved prior to correction and following correction of the rapid aiming movement, contained error at both ends of the movement and not merely at the final target as was assumed in the analysis. This problem did not arise in Experiment One since all movements were initiated from the same point and errors were not, therefore, confounded.

Examination of the mean distance moved prior to correction showed that for 40 cm movements to the 4 cm peripheral plate the distance moved on the return rapid aiming movement was greater than for similar movements to the 1 and 2 cm plates. Furthermore, this difference was maintained following correction of the rapid aiming movement implying that for the 4 cm peripheral plate the actual amplitude of movement was greater than 40 cm. However, this did not result in the greatest effective target width. The validity of this result must, however, be suspect since much of the error obviously occurred at the periphery and as such was not accounted for in the calculation of W_e around the final target (see figure 14).

In the light of these findings it is difficult to comment upon the results for other dependent variables in the experiment.

A further methodological limitation related to the timing of the movement out to the peripheral plate. Long amplitude movements were given proportionally longer times for acquiring the peripheral plate than were short movements. This difference in time may have been sufficient for subjects to perform accurate movements to the peripheral plate. Calculation of effective target widths for movements to the

CORRIGENDUM

TO CORRECT MISTAKE IN NUMBERING SYSTEM

BLANK PAGE INTENTIONAL.

peripheral plates may have demonstrated that for all peripheral target widths the effective target width of movements to the periphery were the same. Such a finding would suggest that the most important measure of peripheral attentional demand would not be the size of the peripheral plate given by the experimenter , but rather the effective target width calculated from the length of movements to the plate provided by the subject. Effective target widths can then be calculated using a method reported by Welford (1968) and employing a correction factor reported by Crossman (1957).

Equivalence of reaction time data for the three peripheral target widths may have been due to the fact that in movements to large peripheral plates, more time was taken in the preparation of the return rapid aiming response than in acquisition of the peripheral plate. In movements to narrow plates, however, the long reaction times recorded may have been reflective of increased time required to acquire the peripheral target and not in the time required to generate an adequate response (see figure 13(a)).

Taken together the methodological limitations of the current experiment are so numerous that an interpretation of the obtained results would be meaningless. A possible experimental paradigm which could provide information relating to attentional demand in reciprocal aiming responses without the drawbacks of the current experiment could be performed as follows. subjects would be required to move alternately between targets of differing widths. The distribution of shots around each target would be indicative of the effective target width for that target. If the proposed theory was correct then no differences in

effective target width would be obtained regardless of the size of the aimed for targets. However, differences would exist in parameters related to movement velocity.

Figure 9 shows mean and standard deviations for duration of accelerative impulse while figure 11 shows magnitude of accelerative impulse and its associated standard deviation. Both functions appear to demonstrate linear increases with amplitude for each peripheral target width. Although these results are inconclusive it is interesting to note that such results would be supportive of the Schmidt model even though the movements which produced these results were reciprocal in nature. Similar results were obtained for duration and magnitude of decelerative impulse, figures 10 and 12. The most strikingly linear relationship being for PTW 4 cm this being the peripheral target width which was predicted to show characteristics most similar to the single rapid aiming movements described by Schmidt.

General Discussion

Experiment One provided evidence which suggested that the variable application of Fitts' (1954) and Schmidt et al (1978, 1979) formulations was dependent upon the attentional demands of the tasks. Fitts law would appear to hold in conditions in which subjects were operating beyond the processing capacity of the motor system while the Schmidt relationship could conceivably hold in conditions in which subjects operated below that capacity. Experiment One indicated that the accuracy of movements could be maintained with increased velocity as long as the limited processing capacity of the motor system was not overloaded. This would suggest that when available capacity for the processing of movements is reduced, factors related to the speed of movement are affected before factors related to the accuracy of movement.

Polit and Bizzi (1979) comparing normal intact monkeys and monkeys with bilateral dorsal rhizotomy (C2 - T3) performing forearm positioning movements demonstrated that specimens performed the aiming responses with equal accuracy even when limbs were unexpectedly displaced prior to the initiation of the movement. Since visual feedback was not available to the monkeys, success in the task could not be credited to this source. Most importantly, the success of the aiming response was maintained even when the limb was displaced beyond the aimed for target and the response required changed, therefore, from a forward to a reverse motion.

Accounting for these findings Polit and Bizzi postulated that the 'motor program' specified, through the selection of a set of

length - tension parameters in the agonist and antagonist muscles, an equilibrium point which correctly positioned the limb in relation to the target. Final equilibrium was seen as a function of the passive elastic properties of the muscles in operation following a change in length or tension of the agonist or antagonist groups.

This 'mass spring' view of control has been criticised as it appears that muscle does not function according to the laws which govern the operation of normal springs. Houk (1976) demonstrated that the properties of muscles changed during movement and the critical variable in movement control was muscle stiffness, the function of length and tension. It would appear, however, that the motor system is capable by some means, of programming the end point of movements. Polit and Bizzi (1979) qualify this suggestion by proposing that the mechanism responsible for achieving final position must be paralleled by a mechanism to control limb velocity, since movements acquiring the same target may differ in velocity.

The results of Experiment One may be interpreted as lending support to this modular view of movement control, since subjects in each of the three movement conditions acquired the targets with equal accuracy but with many differences in other measured parameters of movement. This may be expected if the acquisition of a target involved the execution of a program, a major component of which was responsible for the accuracy of the movement or the acquisition of the end point.

Combining this modular view of organization with a capacity view of the information processing system would suggest that as attentional demand of peripheral events increased then the capacity

available for the formulation of the response program would be reduced. Such conditions existed in Conditions One and Two of Experiment One. The observed differences in the accelerative and decelerative impulse magnitudes and durations and their associated variabilities, together with differences in movement time and velocity may perhaps be attributed to differences in attentional demands of the tasks. Increased demands on attention result in incomplete or deficient programming of certain response parameters due to decreased availability of processing capacity.

The concept that attention is required during the initiation phase of movement has recently been forwarded by Norman and Shallice (1980). They proposed that the production of movement sequences often involved accessing a number of resources or schemas and that attentional control dictates the relevance given to a specific component schema. In terms of the first experiment it could be argued that a component schema representing the movement endpoint was given maximum activation in all three movement conditions and as a result, all three conditions resulted in equally accurate movements. The activation levels associated with other component schemas varied according to the overall attentional demand of the task. According to Norman and Shallice, in times of high attentional activity the activation levels for certain component schemas or parameters of those schemas may fall below threshold and as a result fail to be executed. At the moment of initiation of the movement the source schema representing the required act would be composed of all the parameters required to perform the act accurately and as many of the parameters for velocity as could be

fitted in the available capacity. Increased capacity therefore leads to more complete programming. The addition of further parameters occurs in an orderly fashion.

With reference to Experiment One, of particular interest is the comparison between Conditions One and Three (response to tone and self initiated). In both cases the required movement was identical and both were performed with equal accuracy. However, other measured parameters of the movements showed significant differences and it was proposed that these differences were due to the differential attentional demand at the initiation of the task. For movements requiring a planned change of direction, as in Condition Two, attention demanded was increased due to competition for processing capacity between the program controlling the movement out to the periphery and the program required to control the movement back to the target. However, the parameters responsible for accuracy of the movements are still given highest activation and the observed reduction in velocity is due to incomplete specification of velocity parameters.

It appears therefore, that attention demands of tasks critically affect the construction of response programs which resulted in the observed differences in the measured parameters of the movements.

In an earlier pilot study (Wilberg, Franks and Fishburne, note 2) results did not support a linear increase in effective target width with amplitude or movement time. Rather, subjects exhibited a bandwidth type of performance in that effective target widths could be maintained for a range of amplitudes and movement times. Increasing the velocity of a movement did not by necessity result in an increase in effective target width. The current investigation also demonstrated this

phenomenon. Interpretation of figures 6 (a) and (b) suggest that an increase in velocity from 50 to 100 cm per second or of amplitude from 10 to 20 cm was not associated with increased W_e for any treatment condition. However, an increase in amplitude from 20 to 40 cm and velocity from 100 to 150 cm per second resulted in a uniform increase in W_e for all conditions. Whether similar plateaus would be observed at increased amplitudes and velocities cannot be deduced from the data available. The current study does support the opinion that effective target width is related to a measure of movement difficulty. The bandwidth behavior also gave rise to the possibility that the difficulty of the movement is a perceptual phenomenon in that certain movements may have been perceived to be of equal difficulty even when the amplitude and velocity were increased. There was a possibility that the maximum information contained in a movement, the actual transmitted information and the perceived information differed and that perceived information is a more sensitive measure of task difficulty. Future experimentation may be directed towards this point and the application of Signal Detection Theory may offer a means of examining the question.

Kerr (1977) reported the presence of a 51 Hz frequency movement component in the accelerometer trace of subjects performing rapid aiming movements. This component apparently became evident with practice and may have been the result of learning. This was particularly true in movements with high terminal accuracy requirements. Although the current experiments did not speak to this point, future research may demonstrate that with practice the speed of reciprocal movements increases and this increase in speed is associated with the emergence

of the 51 Hz movement component. This is a proposition which the author feels deserves further attention.

In reciprocal tasks, it has been suggested that many of the deficiencies in performance were related to the increased attentional demand of the peripheral target. Fitts (1954) demonstrated increased information transmission as a result of practice in reciprocal tasks. Such an increase may be interpreted as being the result of a decrease in attention demanded at periphery related to a decrease in the uncertainty both in the position of the peripheral target and also in the subsequently required aiming movement. It would be expected, therefore, that time spent in the transition phase of the movement would be reduced as a function of learning. This may result in reciprocal performances approaching those of single aiming responses. A further study would examine the duration of the transition phase and changes in the duration of the phase with practice and its effect on the measured parameters of movement.

The present experiments provided some evidence to support the theory that the differential application of the Fitts' and Schmidt formulations be due to differential demands on the attentional mechanisms. The locus of attention demand in reciprocal tasks appeared to be at the points of reversal in movement direction. In situations subjects operate below the capacity of the information processing system the author believes that the Schmidt formulation may hold. When subjects operate beyond the capacity of the processing system results may fit the Fitts' formulation.

References

- Adams, J. A. A closed-loop theory of motor learning. Journal of Motor Behavior, 1971, 3, 111-150.
- Adams, J. A. Issues for a closed-loop theory of motor learning. In G. E. Stelmach (Ed.) Motor control: Issues and trends. New York: Academic Press, 1976.
- Annett, J., Golby, C. W., and Kay, A. The measurement of elements in an assembly task - the information output of the human motor system. Quarterly Journal of Experimental Psychology, 1958, 10, 1-11.
- Asatryan, D. G., and Feldman, A. G. Biophysics of complex systems and mathematical models. Functional tuning of the nervous system with control of movement or maintenance of a steady posture. 1. Mechanographic analysis of the work of the joint on execution of a postural task. Biophysics, U.S.S.R., 1965, 10, 925-935.
- Bahrack, H. P., Noble, M., and Fitts, P. M. Extra task performance as a measure of learning a primary task. Journal of Experimental Psychology, 1954, 45, 299-303.
- Beggs, W. D. A., and Howarth, C. I. Movement control in a repetitive motor task. Nature, 1970, 225, 752-753.
- Beggs, W. D. A., and Howarth, C. I. The accuracy of aiming at a target: some further evidence for a theory of intermittent control. Acta Psychologica, 1972, 36, 171-177.
- Bernstein, N. A. The coordination and regulation of movements. London: Pergamon Press, 1967.
- Bizzi, E., Polit, A., and Morasso, P. Mechanisms underlying achievement of final head position. Journal of Neurophysiology, 1976, 39, 435-444.
- Bizzi, E., Dev, P., Morasso, P. and Polit, A. Effect of load disturbances during centrally initiated movements. Journal of Neurophysiology, 1978, 41, 542-556.
- Bizzi, E., and Polit, A. Characteristics of motor programs underlying arm movements in monkeys. Journal of Neurophysiology, 1979, 52, 183-194.

- Bossom, J. Movement without proprioception. Brain Research, 1974, 71, 285-296.
- Brooks, V. B. Some examples of programmed limb movements. Brain Research, 1974, 71, 299-308.
- Brown, J. S., and Slater-Hammel, A. T. Discrete movements in the horizontal plane as a function of their length and direction. Journal of Experimental Psychology, 1949, 39, 84-95.
- Buller, N. P., Garnett, R., and Stephens, J. A. The reflex responses of single motor units in human hand muscles following muscle afferent stimulation. Journal of Physiology, 1980, 303, 337-349.
- Burke, R. E., and Edgerton, V. R. Motor unit properties and selective involvement in movement. Exercise and Sport Science Reviews, 1975, 3, 31-69.
- Cooke, J. D. and Eastman, M. J. Long loop reflexes in the tranquilized monkey. Experimental Brain Research, 1977, 27, 491-500.
- Cooke, J.D. Dependence of human arm movements on limb mechanical properties. Brain Research, 1979, 165, 366-369.
- Crossman, E. R. F. W. Entropy and choice time: the effect of frequency unbalance on choice responses. Quarterly Journal of Experimental Psychology, 1953, 5, 41-51.
- Edwards, E. Research note on the study of hand movements. Perceptual and Motor Skills, 1965, 20, 1098.
- Ells, J. G. Analysis of temporal and attentional aspects of movement control. Journal of Experimental Psychology, 1973, 99, 10-21.
- Evarts, E. V., and Granit, R. Relations of reflexes and intended movements. Progress in Brain Research, 1976, 44, 1-14.
- Falkenberg, L. E., and Newell, K. M. Relative contributions of movement time, amplitude and velocity to response initiation. Journal of Experimental Psychology: Human Perception and Performance, 1980, 6, 4, 760-768.
- Feldman, A. G. Control of muscle length. Biofizica, 1974, 19, 749-753.
- Feldman, A. G. Change of muscle length due to the shift of the muscle load system. Biofizica, 1974, 19, 534-538.
- Fitts, P. M. The information capacity of the human motor system in controlling the amplitude of movements. Journal of Experimental Psychology, 1954, 47, 6, 381-391.

- Fitts, P. M. perceptual-motor skill learning. In A. W. Melton (Ed.) Categories of human learning. New York; Academic Press, 1964.
- Fitts, P. M., and Peterson, J. R. Information capacity of discrete motor responses. Journal of Experimental Psychology, 1964, 67, 103-112.
- Fitts, P. M., and Radford, B. K. Information capacity of discrete motor responses under different cognitive sets. Journal of Experimental Psychology, 1966, 71, 475-482.
- Garnett, R., and Stephens, J. A. The reflex response of single motor units in human first dorsal interosseous muscle following cutaneous afferent stimulation. Journal of Physiology, 1980, 303, 351-364.
- Glencross, D.J. The effects of changes in task conditions on the temporal organization of a repetitive speed skill. Ergonomics, 1975, 18, 17-28.
- Glencross, D. J. Control of skilled movements. Psychological Bulletin, 1977, 84, 14-29.
- Glencross, D. J., and Oldfield, S. R. The use of ischemic nerve block procedures in the investigation of the sensory control of movements. Biological Psychology, 1975, 2, 165-174.
- Glencross, D. J., and Gould, J. H. The planning of precision movements. Journal of Motor Behavior, 1979, 11, 1, 1-9.
- Hancock, W. M., Langolf, G. D., and Clark, D. C. Development of standard data for stereoscopic microscope work. Transactions, 1973, 5, 113-118.
- Henry, F. M., and Rogers, E. E. Increased response latency for complicated movements and a 'memory drum' theory of neuromotor reaction. Research Quarterly, 1960, 31, 448-458.
- Henry, F. M. Use of simple reaction time in motor programming studies: a reply to Klapp, Wyatt, and Lingo. Journal of Motor Behavior, 1980, 12, 2, 163-168.
- Hick, W. E. On the rate of gain of information. Quarterly Journal of Experimental Psychology, 1952, 4, 11-26.
- Houk, J. C. Regulation of stiffness by skeletomotor reflexes. Annual Review of Physiology, 1979, 41, 99-114.
- Howarth, C. I., Beggs, W. D. A., and Bawden, J. M. The relationship between speed and accuracy of movement aimed at a target. Acta Psychologica, 1971, 35, 207-218.

- James, W. Principles of Psychology. New York; Holt, 1890.
- Keele, S. W. Movement control in skilled motor performance. Psychological Bulletin, 1968, 70, 387-405.
- Keele, S. W., and Posner, M. Processing of visual feedback in movement. Journal of Experimental Psychology, 1968, 77, 155-158.
- Keele, S. W., and Summers, J. J. The structure of motor programs. In G. E. Stelmach (Ed.) Motor control: issues and trends. New York: Academic Press, 1976.
- Kelso, J. A. S., Southard, D. L., and Goodman, D. On the nature of human interlimb coordination. Science, 1979, 203, 1029-1031.
- Kelso, J. A. S., Southard, D. L., and Goodman, D. On the c-ordination of two-handed movements. Journal of Experimental Psychology: Human Perception and Performance, 1979, 5, 229-238.
- Kelso, J. A. S., and Holt, K. G. Evidence for a mass spring model of human neuromuscular control. In C. H. Nadeau et al (Eds.) Psychology of motor behavior and sport. Human Kinetic Publications; Illinois, 1980.
- Kerr, B. Task factors that influence selection and preparation for voluntary movements. In G. E. Stelmach (Ed.) Information Processing in motor learning and control. New York: Academic Press, 1978
- Kerr, R. Movement time in an underwater environment. Journal of Motor Behavior, 1973, 5, 175-178.
- Kerr, B. Motor control in aimed movements. In D. W. Landers, and R. W. Christina (Eds.) Psychology of motor behavior and sports. Vol. I. Champaign, Illinois: Human Kinetics Publications, 1977.
- Klapp, S. T. Syllable-dependent pronunciation latencies in number naming, a replication. Journal of Experimental Psychology, 1974, 102, 1138-1140.
- Klapp, S. T. Feedback versus motor programming in the control of aimed movements. Journal of Experimental Psychology: Human Perception and Performance, 1975, 2, 147-153.
- Klapp, S. T. Short term memory as a response preparation state. Memory and Cognition, 1976, 4, 721-729.

- Klapp, S. T. Reaction time analysis of programmed control. In R. S. Hutton (Ed.) Exercise and Sport Science Reviews, Vol. 5, Santa Barbara, California, Journal Publishing Affiliates, 1978.
- Klapp, S. T., Wyatt, E. P., and Lingo, W. M. Response programming in simple and choice reactions. Journal of Motor Behavior, 1974, 6, 263-271.
- Knight, A. A., and Dagnall, P. R. Precision in movements. Ergonomics, 1967, 10, 321-330.
- Knight, J. L., Knight, J. R. and Kantowitz, B. H. Speed-accuracy trade-off in double stimulation: II. Effects on the second response. Memory and Cognition, 1976, 4, 6, 690-700.
- Knight, J. L., Knight, J. R., and Kantowitz, B. H. Speed-accuracy trade-off in double stimulation; effects on the first response. Memory and Cognition, 1974, 2, 522-532.
- Langolf, G. D., Chaffin, D. B., and Foulke, J. A. An investigation of Fitts' Law using a wide range of movement amplitudes. Journal of Motor Behavior, 1976, 8, 2, 113-128.
- Lashley, K. A. The problem of serial order in behavior. In L. A. Jeffress (Ed.) Cerebral mechanism in behavior. New York: Wiley, 1951.
- Laszlo, J. I. The performance of a simple motor task with kinesthetic sense loss. Quarterly Journal of Experimental Psychology, 1966, 18, 1-8.
- Laszlo, J. I. Kinesthetic and exteroceptive information in the performance of motor skills. Physiology and Behavior, 1967, 2, 358-365.
- Laszlo, J. I. The role of visual and kinesthetic cues in learning a novel skill. Australian Journal of Psychology, 1968, 20, 191-196.
- Laver, J. D. M. The production of speech. In J. Lyons (Ed.) New horizons in linguistics. Harmondsworth, Middlesex, England; Penguin, 1970.
- Lenneberg, E. G. Biological foundations of language. New York: Wiley, 1967.
- McLeod, P. Parallel processing and the psychological refractory period. Acta Psychologica, 1977, 41, 381-396.
- Magledery, J. W., McDougal, D. B. J., and Stoll, J. Electrophysiological studies of nerve and reflex activity in normal man. Bulletin of the Johns Hopkins Hospital, 1950, 86, 291-312.

- Maynard, H. B., Stegmerten, G. J., and Schwab, J. L. Methods-Time measurement. New York: McGraw Hill, 1948.
- Mott, F. W., and Sherrington, C. S. Experiments of the influence of sensory nerves upon movement and nutrition of limbs. Proceedings of The Royal Society, 1895, 57, 480-488.
- Newell, K. M., Hoshizaki, L. E. F., Carlton, M. J., and Halbert, J. A. Movement time and velocity as determinants of movement timing accuracy. Journal of Motor Behavior, 1979, 11, 49-58.
- Peter, W., and Wenborne, A. A. The time patterns of voluntary movements. British Journal of Sports Psychology, 1936, 26-27, 388-406 and 60-73.
- Pew, R. W. Acquisition of hierarchical control over the temporal organization of a skill. Journal of Experimental Psychology, 1966, 71, 764-771.
- Pew, R. W. Human perceptual motor performance. In B. H. Kantowitz (Ed.) Human information processing; tutorials in performance and cognition. New York: Erlbaum, 1974.
- Philips, D. E., Powell, T. P., and Wiesendanger, M. Projections from low-threshold muscle afferents of hand and forearm to area 3a of a baboon cortex. Journal of Physiology, 1971, 217, 419-446.
- Provins, K. A. Sensory factors in the voluntary application of pressure. Quarterly Journal of Experimental Psychology, 1957, 9, 28-42.
- Roediger, H. L., Knight, J. L., and Kantowitz, B. H. Infering decay in short-term memory: the issue of capacity. Memory and Cognition, 1977, 5, 167-176.
- Quinn, J. T. (Jr.), Schmidt, R. A., Zelaznik, H. N., Hawkins, B., McFarquhar, R. Target-size influences on reaction time with movement time controlled. Journal of Motor Behavior, 1980, 12, 4, 239-261.
- Schmidt, R. A. A schema theory of discrete motor skill learning. Psychological Review, 1975, 82, 225-260.
- Schmidt, R. A. On the theoretical status of time in motor program representation. In G. E. Stelmach and J. Requin (Eds.) Tutorials in motor behavior. New York: North Holland, 1980.

- Schmidt, R. A., Zelaznick, H. N., and Frank, J. S. Sources of inaccuracy in rapid movements. In G. E. Stelmach (Ed.) Information processing in motor learning and control. New York: Academic Press, 1978.
- Schmidt, R. A., Zelaznick, H. N., Hawkins, B., Frank, J.S., and Quinn, J. T. (Jr.). Motor output variability; a theory for the accuracy of rapid acts. Psychological Review, 1979, 96, 415-451.
- Schmidt, R. A., and McGown, C. Terminal accuracy of unexpectedly loaded rapid movements; evidence for a mass spring mechanism in programming. Journal of Motor Behavior, 1980, 12, 148-161.
- Shapiro, D. C. A preliminary attempt to determine the duration of a motor program. In D. M. Landers and R. W. Christina (eds.) Psychology of motor behavior and sport (vol. I). Urbana, Illinois: Human Kinetics Publications, 1977.
- Skavenski, A. A. Inflow as a source of extra-retinal eye position information. Vision Research, 1972, 12, 221-229.
- Smith, K. U. Delayed sensory feedback and behavior. Philadelphia: Saunders, 1962.
- Taub, E., and Berman, A. J. Movement and learning in the absence of sensory feedback. In S. J. Freedman (Ed.) The neuropsychology of spatially oriented behavior. Homewood, Illinois: Dorsey Press, 1968.
- Taylor, F. V. A study of the acceleration pattern of manual corrective responses. American Psychologist, 1977, 2, 340.
- Turvey, M. T., Shaw, R., and Mace, W. Issues in the theory of actions: degrees of freedom, coordinative structures and coalitions. In J. Requin (Ed.) Attention and Performance VII, Hillsdale, New Jersey: Lawrence Erlbaum, 1978.
- von Bertalanffy, L. General systems theory. London, Penguin Press, 1973.
- Welford, A. T. The psychological refractory period and the timing of high speed performance-- a review and a theory. British Journal of Psychology, 1952, 43, 2-19.
- Welford, A. T. The measurement of soensory-motor performance: survey and reappraisal of twelve years progress. Ergonomics, 1960, 3, 189-229.
- Welford, A. T. Fundamentals of skill. Methuen and Co. Ltd., 1968.
- Welford, A. T., Norris, A. H., and Shock, N. W. Speed and accuracy of movement and their changes with age. Acta Psychologica, 1969, 30, 3-15.

Woodworth, R. S. The accuracy of voluntary movement.
Psychological Monographs, 1899, 3, #2.

Notes

1. Crossman, E. R. W. F., and Goodeye, P.J. Feedback control of hand movements and Fitts' law. In Proceedings of the Experimental Society, Oxford, 1963.
2. Wilberg, R. W., Franks, I. M., and Fishburne, G. Movement Variability. Unpublished research, University of Alberta, 1980.

APPENDIX A

Fitts' Law

The concept that the accuracy of rapid movements decreased with amplitude has been known for many years. However, the close relationship between speed, amplitude and accuracy of movement received little attention from early workers in the field of motor performance. Woodworth (1899), was one of the earliest experimenters to emphasize the importance of this inter-relation. In a variety of simple motor tasks, performed with and without the aid of visual monitoring, Woodworth demonstrated that for quick, visually controlled movements, variable error increased with both amplitude and speed. Subsequently, industrial engineers advocated the use of small amplitude movements in assembly work on the grounds that the time required to complete a unit of work increases as a function of its amplitude as well as of the precision demanded by the task, (Maynard, Stegemerten and Schwab, 1948).

The application of information theory to the study of sensory, perceptual and perceptual motor functions, allowed a more specific measurement of man's performance capacities, (Crossman, 1955; Hick, 1952). Fitts (1954) extended the theory to embrace the human motor system. Fitts stated that the information capacity of the human motor system is specified by its ability to produce: "one class of movement from among several alternative movement classes" (p.381). Further: "The greater the number of alternative classes, the greater is the information capacity of a particular type of response." (p.381). From this, Fitts concluded that since measurable aspects of responses such as amplitude and force are continuous variables, information

capacity is limited only by the amount of variability that is characteristic of repeated attempts to produce the same response. Therefore, the information capacity of the motor system can be assessed from measures of variability of responses which are meant to be uniform.

Fitts' (1954) theory stated that, since the information transmission capacity of the motor system is fixed, it could be expected that if repetitive movements of average amplitude are 'speeded up' then each movement can provide less information and, therefore, movement variability will increase by a specified amount. Similarly, if the amplitude is increased then variability in the movement, and/or its duration, will also increase. Stating the specific hypothesis:

"If the amplitude and tolerance limits of a task are controlled by E, and S is instructed to work at his maximum rate, then the average time per response will be directly proportional to the minimum average amount of information per response demanded by the particular conditions of amplitude and tolerance." (p.383)

Fitts tested the hypothesis using a number of tasks, including: a reciprocal tapping task; a disc transfer task and a pin transfer task. In all cases Fitts found that: "The rate of performance of all the tasks studied increased uniformly as movement amplitude was decreased and as tolerance limits were extended." (p.387).

In order to test the results against a prediction that the information output of the motor system in any task is relatively

constant over a range of amplitudes and accuracy requirements, Fitts formulated an index of difficulty which specified the minimum information required for organizing each movement. Minimum organization is the specifying of one from several possible amplitudes within which the movement is to terminate. In binary notation:-

$$ID = -\log_2 \frac{W}{2A} \quad \text{bits/response.} \quad (1)$$

Where ID = Index of Difficulty
 W = Tolerance range in inches
 A = Average amplitude

The results of Fitts experiments confirmed that the movement time varied with task difficulty in such a way that ID was constant over a wide range of amplitudes and tolerances. That is to say, that movements of different amplitudes but of equal difficulty in terms of information, are of approximately equal duration. The average time per movement, MT, was related to A and W by the following relation:-

$$MT = a + b \log_2 \frac{2A}{W} \quad (2)$$

where a and b are empirically fitted regression parameters.

According to the information theory interpretation, the slope parameter, b, is the inverse of the motor system processing rate channel capacity. In the previous studies of arm movements

b has been in the region of .100 bits/second. Fitts (1954) speculated that different limbs may show different information processing rates. Hancock, Langolf and Clark (1973) supported this showing an information processing rate of 20 bits/second for very small amplitude movements of the fingers and wrist. It was also shown that the times for a variety of microminiature assembly tasks, performed under microscopes, were proportional to the index of difficulty, ID. In general, Fitts' Law has been shown to hold in a variety of experimental situations and across a broad perspective of populations (Kerr, 1973; Welford, Norris & Shock, 1969).

Since the introduction of Fitts' Law there have been many attempts to modify the relationship to obtain more accurate descriptions of obtained data, but little or no improvement has resulted from this work. Welford (1960), using data from Fitts' (1954) reciprocal tapping task, formulated an equation which best fitted the data to a straight line:-

$$MT = K \log (A/W + .5) \quad (3)$$

According to Welford: "This formulation makes movement time dependent upon a kind of Weber fraction in that the subject is called upon to distinguish between the distances to the far and near edges of the target." (p.147). Welford also identified situations in which the subject did not use the full target width. Under these circumstances the subject is transmitting more information than that calculated by equation three since the effective target width is

narrower than the target. The narrowing of the target width, W , is reflected in a reduction in errors and, according to Welford, if this is allowed for then equation (3) holds reasonably well.

Crossman (1957) described a method for correcting for errors based on the fact that the information in a normal distribution is given by: $\log_2 (2E)$, where E is the standard deviation of the distribution. Since $(2E) = 4.133$ and plus or minus one half of this includes approximately 96% of the distribution, Crossman argues that if approximately 4% of shots fall outside the target that $\log_2 W$ is an accurate representation of the information contained in the distribution of shots. Also, if errors exceed 4% then the 'effective target width', W_e , is greater than W and, if errors are less than 4% W_e is less than W . Welford (1968) showed that Fitts' data, as plotted using equation (3) and corrected for errors using the Crossman method closely approximated a straight line passing through the origin.

Numerous experiments have produced results which are in striking agreement with Fitts. Knight and Dagnall (1967), using a task in which subjects had to align a pointer alternately between two targets, obtained results which closely fitted equation (3). Fitts and Peterson (1964) obtained results closely fitting equation (3) for 'single movements' carried out after a separate signal to move. Fitts and Radford (1966) demonstrated that accuracy improved as time taken to complete the movement increased, however, it was not affected by time taken to prepare, and the rate of gain of information was little affected whether the instructions were for

speed or accuracy.

Theories Accounting for Fitts' Law

The most widely accepted explanation for the phenomenon described by Fitts was that presented by Crossman and Goodeve (1963), and later represented by Keele (1968). The theory is based on two assumptions: (a) that the subject is able to detect errors in movement and subsequently issue corrections; and (b) that the initial movement and subsequent corrections have a fixed relative accuracy. Crossman and Goodeve demonstrated that movements were not smooth but showed evidence of acceleration and deceleration with fixed periodicity, suggesting that movements consisted of a series of impulses, taking approximately the same time, but differing in velocity. The first movement may, for example, cover half the distance to be covered, the second the next quarter, and the next the next eighth, and so on. This explanation emphasizes feedback control in rapid movements with limitation in movement speed being defined by the number of corrections the subject must make to acquire the target. Using this argument, Keele (1968) has shown that Fitts' Law can be derived mathematically.

Findings from research examining movement patterns are equivocal, showing that movement corrections may (Annett, Golby & Kay, 1958; Brown & Slater-Hammel, 1949) or may not (Langolf, Chaffin & Foulke, 1976) take place in aiming responses.

The Crossman - Goodeve theory has, however, come in for much

criticism on a number of counts. Logically it can be seen that correcting for errors in response selection would take at least one reaction time to perform since a new temporal-spatial pattern of movement needs to be initiated. This would take between 120 and 200 msecs. Schmidt, Zelaznick, Hawkins, Frank and Quinn (1979), suggest that such corrections may, in fact, take longer than one reaction time.

The Crossman-Goodeve theory assumes a correction every 200 msecs. with the first coming 200 msecs. after the initiation of the movement. Schmidt et al. (1979) suggest that if the first correction appears 200 msecs. after initiation of the movement, and the reaction time for the correction is 200 msecs., then the error must have been detected prior to or at the moment movement was initiated.

"Logically it would seem that some initial portion of the movement must be carried out before the system could detect that the movement was in error." (Schmidt et al., 1979, p.5.)

By this argument it would appear that the first correction could not occur 200 msecs. after the error was detected and the actual time of correction would, perhaps, be nearer 300 msecs. after the movement was initiated.

Furthermore, the Crossman-Goodeve (1963) model holds that corrections are required in a movement. Langolf (1973) has noted, however, that microscopic movements show little evidence of corrections, perhaps because they are programmed correctly from the start. Schmidt et al. (1979), regard the necessity for corrections in

a movement, and the failure to account for movements requiring no corrections, as a conceptual weakness of the model.

Another interesting objection arises from the work of Hick (1952) examining choice reaction time tasks. The suggested time for a single correction of 200 msec. assumes a simple reaction time where the number of possible errors which can occur in the movement is reduced to one. This is obviously not the case, as the number of possible errors greatly exceeds one and the situation is, therefore, one of choice reaction time. Therefore the suggested time for correction of 200 msec would seem to underestimate the time required for a correction.

The Psychological Refractory Period.

The psychological refractory period (PRP), the delay in responding to a stimulus while another is being processed, was first reported by Welford (1952). In accounting for the phenomenon Welford proposed that:

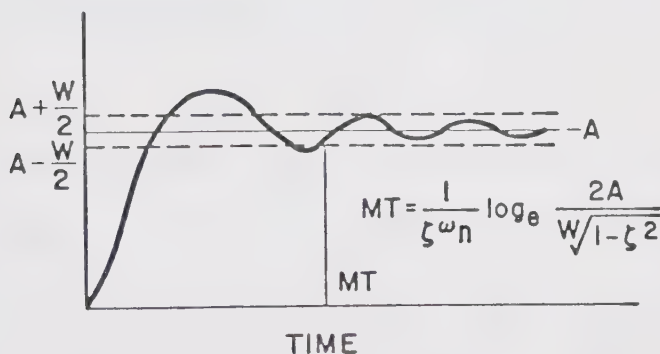
1. All input and output streams are controlled by a common processor, and
2. The processor acts sequentially on current inputs, rather than simultaneously.

With regard to the Crossman-Goodeve theory, it would appear unlikely, in the light of PRP, that responses to two closely following feedback stimuli could occur within the suggested 200 msec., since processing of the second stimulus could not occur until a response to

the first had been made. Even assuming the parallel processing model of McCleod (1977), which would allow processing of the second feedback stimulus along with the first, a decrement in response to the first stimulus would be noted. In neither case could processing and response be completed within 200 msec.

Systems Models

Langolf et al (1976) present the Crossman-Goodeve theory as representing a first order system response. A second order underdamped system is also shown to settle according to Fitts' law, (see figure below), and it was proposed that further linear control systems models have outputs obeying Fitts' law.



Representation of second order underdamped system from Langolf et al (1976, p. 115).

An examination of a wide range of amplitudes using the Fitts' reciprocal tapping task was made in order to confirm the applicability of control systems models to Fitts' law. Under large amplitudes it was found that:-

"...linear control models are untenable explanations of Fitts' law. The human trajectories are obviously non-linear. For all linear models discussed, decreasing the terminal tolerance W simply has the effect of adding more settling time to the same basic movement trajectory. However.... changing the tolerance has the effect of completely altering the human's movement trajectory. In particular the Crossman-Goodeve and Keele constant time, constant accuracy discrete corrections models specified that the movement should on the average achieve a given deviation from target center (P/A) after each discrete correction n at time nt . Thus the discrete corrections model must generally show the same rate of progress toward target center regardless of terminal tolerance W . Therefore, if a discrete correction mechanism is present (but masked by inertia), then in order to produce the varied trajectories of figure 12, the time per correction (t) and/or relative accuracy (P) must change as a function of tolerance demands (W). The real explanation of Fitts' law in terms of method of human control must be more complex and non-linear."

Langolf et al. (1976) found that larger amplitude movements did not show evidence of break points indicating a discrete correction process.

Decreasing the tolerance, W , merely had the effect of progressively decreasing the velocity of the movement in approaching the target.

Based on experimental evidence that the hand slows down as it approaches a target (Peters & Wenborne, 1936; Taylor, 1947; Edwards, 1965) Howarth, Beggs and Bawden (1971) proposed an intermittent feedback theory for the control of aiming movements. Howarth and Beggs (1970) proposed the existence of a visually mediated intermittent correction mechanism since removal of visual

feedback when the hand is close to the target has little effect on terminal accuracy. This was only the case if there was less than one corrective reaction time between removal of feedback and the hand reaching the target. The theory proposed that the error on target was related to the velocity of the hand during the terminal phases of the movements being made at different speeds. Howarth et al. (1971) provide evidence to support this theory for slow movements. Beggs and Howarth (1972) provide further evidence to support the theory that the error on target is proportional to the distance away at which the last correction was applied.

This theory, however, falls prey to the same criticism as the Crossman-Goodeve theory of movement control in that it can not account for movements which are completed within one corrective reaction time.

Alternative Theories

Motor Output Variability

The previously reviewed theory was based on the subject's ability to process feedback information and to make corrections based on this information. Schmidt, Zelaznick and Frank (1978) suggest that researchers have consistently disregarded the possibility that the output of the human muscular system is contaminated by "noise" (within subject variability) and that this variability is related to the parameters of the movement, i.e., amplitude and speed. According to Schmidt et al. (1978) central to both theories is the notion of the motor program, which can be described as a set of prestructured motor

commands, which, when executed, will complete a movement without involving peripheral feedback. Schmidt et al (1979), proposing the theory of motor output variability, suggested that if movements can be structured in advance, then errors contained in the program, or in the recruitment of motor units involved in its execution, cannot be corrected until the program has been completed.

Evidence is cited by Schmidt et al (1979), from the areas of neurosciences (Brooks, 1974) and motor behaviour (Pew, 1974; Schmidt, 1975, 1976) to support the notion that movement control, especially in rapid movements, is carried out via the motor program. Shapiro (1977) even suggests that motor programs may control movements of duration as long as 1300 msec.

The basic premise of the theory of output variability is that the variability in horizontal distance travelled (effective target width, W_e) in an aiming movement is proportional to the within subject variability of the velocity after the end of acceleration. Since the velocity of a movement is proportional to the magnitude of the accelerative impulse, the variability in velocity is, consequently, proportional to variability in impulse force and the variability in time over which the impulse is acting. As a result the theory proposes that the effective target width, W_e , is proportional to the variability in impulse force and impulse duration.

Schmidt et al. (1979) derived the following proportionalities:-

1. Effective target width and amplitude are proportional.

2. Impulse variability and movement time are inversely

proportional such that $\sigma \text{ Impulse} \propto 1/MT^2$

3. Citing Michon (1967) who demonstrated that the longer an interval of time to be metered, the larger the variability in metering, Schmidt et al proposed a relationship between impulse duration and movement time. Further, assuming a constant force amplitude, that $\sigma \text{ Impulse} \propto MT$.

4. Combining (2) and (3) Schmidt et al. propose that:

$$\text{Impulse} \propto 1/MT$$

5. Combining (4) and (1) gives the basic statement of the model:- $W_e \propto 1/MT$

"The clear implication of this model is that as one asks the subject to move farther or faster, the subject does so with greater noise in his force- and time-production mechanisms, resulting in greater error in reaching the aimed for target." (Schmidt et al., 1979, p.194)

Schmidt et al propose that this notion of speed accuracy trade-off fits well with Fitts' equation, since it suggests that as the subject attempts to move faster he/she will make more errors.

"Thus the present theory sees the limitation in the subject's movement time as an indirect result of his inability to be accurate because of variability in the force production and time-production mechanisms; this is quite different from the Crossman-Goodeve (note 1) model, which suggests that the limitation in movement time is the number of corrections the subject must make in arriving at the end point." (p. 195)

This is the Impulse Timing view of motor control.

Feedback in Motor Programming

Before presenting experimental evidence accumulated by Schmidt et al to support the motor output variability theory; it is intended to review the feedback versus motor programming controversy.

Klapp (1975) suggests that, in a choice reaction time experiment, the signal to respond informs the subject which of a set of possible responses is to be made. During the reaction time interval several processes may occur, of which interpretation of the signal, and programming or preparation of a response are two. Henry et al., (1960) and Klapp (1974), have suggested that when the number of alternative responses is kept constant, then increases in reaction time as a function of response parameters may be interpreted as reflecting changes in the time required to generate the response program.

Klapp (1975), argues that, in the Fitts' and Peterson (1964) paradigm, if reaction time reflects response programming, then choice reaction time should increase as the precision required is increased by reducing the size of the target. However, Ellis (1973) demonstrated that this was not the case. Klapp (1975) goes on to say:

"Although movement time, measured from the moment the stylus leaves the rest position until target contact occurs, depended on both target size and movement length, reaction time was independent of these parameters. This negative result may mean that the response is under feedback control rather than programmed in advance."
(p. 147)

It was stated earlier that research findings concerning the question of corrections were equivocal. Klapp (1975) proposes that in long, accurately terminated movements, the whole movement may not be programmed in advance, accounting for the independence between reaction time and parameters of the movement. Short movements, which may not display corrections (Langolf et al, 1976), could be programmed in advance. If this were the case then more complex responses would require longer programming, leading to the observation of increased reaction time as required precision for short movements increases.

In a single aiming movement, Klapp (1975) demonstrated that the relationship between amplitude and the \log_2 of target width appeared to be linear for long movements but not for short movements. This, for short movements, represented a departure from Fitts' Law. This departure, according to Klapp (1975) suggests that: "...short movements are programmed ahead of time and executed ballistically. On the other hand, Fitts Law should and does hold for long movements which are under feedback control according to the present analysis." (p. 150). This analysis would seem to parallel that suggested by Schmidt et al (1978, 1979) in the theory of motor output variability. Further, Klapp (1975), demonstrated a linear relationship between reaction time and target width for short movements, such that reaction time increased as target width decreased indicating a longer processing time for more precise movements.

Klapp (1975) contended that long movements were under feedback control while short movements were programmed in advance. In a second experiment, in which visual feedback was disrupted by turning out

illumination, it was found that long movements were totally disrupted, while for short movements reasonable accuracy was maintained.

Schmidt and McGown (1980) regard the controversy concerning the locus of movement control as one of the most persistent in the field of motor behaviour. Peripheralists posit that movement is controlled by some combination of feedback from the responding limbs, the visual and auditory systems and the vestibular systems. This position takes two basic forms:

1. A stimulus response chaining hypothesis, James (1980), which suggests that successive responses are elicited by successive cues in the environment. Entire skills can be executed in response to a starting stimulus, in the absence of other external stimuli, since each succeeding response is elicited by the pattern of internal stimuli from the preceding response (Greenwald, 1970).
2. Adams' (1971) closed-loop hypothesis which proposes that feedback is compared to some stored referent which represents correct performance. Errors are determined as deviations from the referent and corrections are issued on this basis.

Centralist theory, conversely, as developed by Henry (1960) and Fitts (1964), emphasizes a central process that is not dependent upon sensory monitoring. Keele (1968) states that a motor program can be viewed as:

"...a set of muscle commands that are structured before a movement sequence begins and that allows the entire sequence to be carried out uninfluenced by peripheral feedback." (p. 387)

The central control hypothesis proposes, therefore, that skilled movements are organized and initiated by some central control process. Knowledge of movement does not depend on the monitoring of afferent input.

One argument against stimulus-response chaining theory involves the rate of processing of feedback information. Lashley (1951) suggested that this processing was too slow to account for rapid sequences of movements such as finger movements in piano playing. Keele (1968) and Glencross (1975) report the time taken to react to kinesthetic information is in excess of 100 msecs , while Keele and Posner (1968) increase this time to between 190 and 260 msecs for visual feedback information. Furthermore, in the complex skill situation, which usually involves perceptual and response uncertainty, Glencross (1977) suggests the shortest interval of intermittent functioning is at least 300 msecs.

Pew (1966), in a task which involved the repositioning of a constantly moving visual target by alternately pressing response keys, demonstrated a change in strategy from feedback dependent pattern early in practice to control by motor program. Early responses were made only after delays in which feedback information about the effectiveness of response was assessed. Later in practice, however, subjects responded rapidly, indicating less dependency on continuous monitoring of sensory feedback and instead, the control of response sequences rather than single units.

Speech, a complex, serially organized skill, shows evidence of central control. Lenneberg (1967) states:

"Thus we gather that the rate at which individual muscular events occur (throughout the speech apparatus) is of an order of magnitude several hundred events every second. It is evident that the activation of so many muscles in such a short time span cannot depend upon volition alone. There must be some automations - whole trains of events that are programmed and run off automatically." (p. 92).

Support of this theory and evidence of 'tone units' in speech is given by Boomer (1965) and Laver (1970).

The most persuasive evidence in favour of central processing comes from the studies of deafferentation in which kinesthetic feedback is prevented in animals by surgically cutting dorsal roots which supply afferent feedback to the central nervous system. Keele and Summers (1975) suggest that if skill can proceed without kinesthesia then stimulus-response chaining, which depends on kinesthetic feedback, cannot explain the sequencing of the skill.

The most impressive experiments of this nature involved the the elimination of sensory feedback in the rhesus monkey. Taub and Berman (1968) repeated the experiments of Mott and Sherrington (1895) by surgically severing the dorsal roots supplying afferent input from one of a monkey's front legs. This procedure, therefore, eliminated sensory feedback without affecting efferent input to the muscles. Mott and Sherrington (1895) observed that the monkey failed to use the deafferented limb, which lent support to the stimulus-response chaining theory of movement control. However, Taub and Berman (1968), after restraining the normal limb, demonstrated that the monkey could, in fact, use the deafferented limb.

Furthermore, when both limbs were deafferented:

:...the animals were able to use the limbs rhythmically and in excellent coordination with the hind limbs during slow and even moderately fast ambulation." (p. 177)

Taub and Berman (1973) have further shown that monkeys deafferented and visually blocked soon after birth learn to walk, suggesting that sequencing of movements in walking is not dependent on normal feedback.

Criticism of the Taub and Berman technique centers around the question of total elimination of sensory feedback. Taub and Berman showed that no cortical responses occurred when nerve ends in a deafferented limb were stimulated. However, Bossom (1974), suggested that some afferent fibers may enter the spinal cord through the ventral root and, therefore, escape severing in dorsal root cutting. Some reservation must, therefore, exist with regard to these results.

More significantly, perhaps, is the emphasis Taub and Berman placed on the ability of the deafferented monkeys to perform gross movements. Bossom (1974) reported that these movements were produced without elegance, suggesting that gross movements can be performed in the absence of sensory feedback but fine motor skills such as manipulative skills, can not.

Ischemic nerve block techniques have been employed in studies of human movement in an attempt to block afferent sensory information. Of importance in this technique is the differential effect on

sensory and motor systems. Loss of sensory information occurs much sooner than loss of muscular power (Magladery, McDougal & Stoll, 1950). Laszlo (1966, 1967, 1968) in a number of studies has shown gross impairment of performance as a result of ischemic blockage. However, Glencross and Oldfield (1975) raise objections to the ischemic nerve block technique by demonstrating gross motor impairment due to the cuff and also the presence of some sensory information arising distal to the cuff. Glencross (1977) states that:

"Consequently, the motor deficit observed following ischemic nerve block is not solely the result of blocked kinesthetic sensation, and thus its relevance to the issue of central versus peripheral control of movement cannot be directly assessed." (p. 21)

Evidence has been presented, therefore, which would suggest some combined or integrated use of central and feedback processes in the organization and performance of movements.

Philips, Powell and Wiesendanger (1971) demonstrated that positional information from the eyes arises from the receptors in the extraocular muscles. Skavenski (1975) demonstrated that feedback control is important in control of eye movement, concluding that: " these inflow signals are accessible to the oculomotor system for the control of eye position." (p. 225). Also, Provins (1957) demonstrated that blocking sensory information by anaesthetizing the metacarpal-phalangeal joint, resulted in impairment in reproducing pressure by flexion.

Further support for the theory comes from the study of effects

of delayed and augmented feedback. Smith (1962) in a review, presents evidence of jerky, uncoordinated movements as the result of delayed visual feedback. Glencross (1975) reports that augmented feedback, when closely related to the task, enhances performance.

This treatment has seen feedback control and motor programming as mutually exclusive modes of control. However, each theory is seen to be deficient to some extent and the possibility that some integrated control mechanism must exist as the means of coordinating skilled movement. Glencross (1975) suggests: "...that for a central control process (e.g. a motor program) to be fully effective, it must be integrated with peripheral sensory information at some stage." (p. 25).

This possibility will be discussed later in the chapter.

Evidence For The Theory Of Motor Output Variability

Schmidt et al.(1978, 1979) conducted a number of experiments in an attempt to confirm the relationships stated earlier in this chapter. Since these are the basis of the theory of motor output variability, a review of these experiments is felt to be in order.

The most important relationships proposed were that variability in force produced was proportional to the force produced, and that the within subject variability in impulse duration is proportional to the impulse duration. These variabilities in force and time could be introduced into the system in two distinct ways.

Either, they could be caused by the subject changing the goal of the response from trial to trial, variability thereby being due to changes in what was programmed. Or, the subject may repeat the same program over and over and variability is introduced as noise downstream from the program, causing different outputs for different trials. In testing the proposed proportionalities, Schmidt et al. (1978, 1979) attempted to have the subject repeat the same movement every trial, thus eliminating the possibility of variability due to choosing different responses.

Variability in Force

Using a fixed lever and attached strain gauge subjects exerted force in order to shoot a dot across an oscilloscope screen to a target. This was done in time with a metronome set at one response per 800 msecs. Force required was varied and a strong linear relationship between the within subject variability in force and the amount of force produced was observed over a wide range of forces. Also, a strong linear relationship between impulse duration and movement time was apparent and this relationship appeared to be a proportional one.

Amplitude

If the amplitude of a movement were doubled, however, the movement time remains constant, Schmidt et al argue that the velocity at the end of acceleration must be twice as large. Impulse for acceleration can only be doubled by increasing force, and variability

of force is proportional to the amount of force produced. Since variability in the impulse is proportional to the effective target width then it follows that:

$$W_e \propto \text{Amplitude}$$

Movement Time

Assuming no variability in the duration of an impulse, halving the movement time for a fixed amplitude movement requires the impulse to increase four fold. Extrapolating from this it can be seen that variability in the impulse will be inversely proportional to the square of the movement time (MT):

$$\text{Impulse} \propto 1/\text{MT}^2$$

Since, however, variability in length of impulse is proportional to impulse duration and therefore movement time, then the variability in the impulse is proportional to the movement time:

$$\text{Impulse} \propto \text{MT}$$

Combining these effects it can be seen that the impulse variability is proportional to $1/\text{MT}$ and hence:

$$W_e \propto 1/\text{MT}$$

Amplitude and Movement Time

Since W_e is directly proportional to amplitude and inversely proportional to movement time, then:

$$W_e \propto A/\text{MT}$$

This is the basic statement of the Schmidt et al (1978, 1979) model, which relates the three variables of movement time, amplitude and movement accuracy in a single expression.

The Single Aiming Paradigm

Schmidt et al (1979) conducted a number of experiments using a single aiming paradigm. The technique involved manipulating amplitude and the movement time allowed and measuring the resultant effective target width. For long movement times (up to 500 msec) the relationship: $W_e \propto A/MT$ did not hold, however Schmidt et al cite Keele and Posner (1968) who found that visually based corrections are possible with aiming responses as short as 260 msec. For short duration movements (less than 200 msec), however, a strong linear relationship between A and MT was found, lending strong support to the model. However, the relationship was not proportional, a finding partly attributed to error in measurement and also noise in the motor system not related to the task being performed.

The Locus of Variability

Schmidt et al (1979) approach the question of variability by assessing the variability added during the various processes contributing to movement. For example, variability may be added as a result of selecting an inappropriate program. However, in a single aiming movement this variability is small since there is little uncertainty about what to do in aiming at the target. Another source of variability is seen as noise, which is added downstream from

parameter selection. Burke and Edgerton (1975) suggest, in physiological terms, that noise might exist in terms of how the neuronal information to the motor neuron pool in the spinal cord becomes translated into the activation of a certain number of motor units, which ultimately determines the amount of force produced.

Based on the findings of Kelso, Southard and Goodman (1979a, 1979b), which demonstrated that simultaneous left and right hand aiming responses had similar kinematic properties, Schmidt et al (1979) examined a two handed paradigm in an attempt to isolate the invariant features of the motor program. For example Kelso et al (1979a, 1979b) found that subjects could move the hands simultaneously different heights or distances, suggesting that these features were not invariant. However, they could not move the hands with different movement times, suggesting that this was common to the two hands, and an invariant feature of the movement determined by the motor program. Logically, Schmidt et al (1979) argue that:

"Whatever these common parameters might be, variability in their selection will be evident in the behaviour of both hands."

Using a two handed aiming task Schmidt (1979) reports that for movement time 69% of the variability in movement times was due to program or common parameter selection and only 31% associated with subsequent factors, (based on between hands correlations). For spatial measures of accuracy, however, only 1% of the variability could be associated with program selection. Schmidt concludes that:

"Very little of the variability in the spatial aspects of a single aiming response is associated with variability in program selection; rather; the variability appears to be caused by variability in the particular parameter selection or in motor unit recruitment. Locating the exact source of this latter variability could have important implications in understanding motor behaviour." (p.433)

Schmidt et al (1979) extend the theory of impulse variability and programmed motor control to apply to motor responses other than hitting a target. In a rapid timing task Schmidt reports that the variable error for timing is essentially unrelated to the amplitude of the movement and directly related to the movement duration, (except for very small movement velocities). These results are also supported by Newell et al (1979).

In the reciprocal tapping task Schmidt reports correlations ranging from .67 to .84 for individual subjects between effective target width and impulse force.

"This result provided some support for the idea that the impulse variability is a major determiner of W_e in the reciprocal-movement task." (p.440)

Schmidt et al (1979) go on to report that:

"We have shown that the variability in movement endpoints (W_e) is linearly and directly related to the movement amplitude, independent of the movement time and independent of the mass to be moved." (p.446)

However, with movement times in excess of 200 msec. Schmidt et al

suggest that their model does not account very well for the effects of amplitude and movement time, which are accommodated well by Fitts' Law. Subsequently it is suggested that Fitts' Law, which is deriveable from the principles of feedback (Crossman and Goodeve, 1963; Keele, 1968) might account for slower responses while the Schmidt et al (1979) theory of motor output variability is more effective for movements of less than 200 msecs. However, Schmidt contends that the Fitts' Law may hold when the subject is attending to the movement. With movements not requiring the subjects attention it is possible that Schmidt's theory may hold even for slower moves.

"We prefer to argue that when subjects make a programmed movement in everyday settings, they do in fact determine the distance and movement time in advance, with the movement accuracy being the result of these choices."
(p.448)

Schmidt et al (1980) propose that the human operator is able to switch between controlled modes of action and actions based on motor programming on the basis of available processing capacity, and the attention demands of a particular situation. Schmidt suggests that subjects adopt feedback control when no other actions are present or the actions require little attention, since the 'cost' of allocating attention is no problem. However, when attentional demands are high, Schmidt suggests subjects abandon the costly feedback-based mode of control in favour of a pre-programmed mode.

The evidence presented by Schmidt et al (1978, 1979) could be interpreted as supporting a model of behaviour in which, for rapid

movements, the subject executes motor programs and variability around the target is due to 'noise' in the motor system. For longer duration movements feedback control is adopted, and noise in the system can, therefore, be corrected for, resulting in less variability around the target. Schmidt's model, therefore, proposes a trade-off between accuracy and attentional demand of a task.

This theory is logically appealing but it does not account for one area of experimental evidence. When ballistic aiming movements are performed, i.e. less than 200 msec. in duration, there is insufficient time for feedback loops to operate for ongoing control purposes. The movements, however are still performed smoothly, and with precision (Glencross, 1973, 1974). When feedback is blocked or distorted, the fine grading of movement and its temporal precision are lost, e.g. Bossom (1974). It would appear, therefore, that in order for a central control process (a motor program) to be executed efficiently it must be integrated in some way with peripheral sensory information. Schmidt et al (1980) propose a switching mechanism based on attentional demand, which does not call for the completely integrated system that is apparently in operation.

To this end Glencross (1977) proposed a two stage integrated model. The first stage, or executive control system, is feedback dependent and is based on an analysis of the input and the relation of the signal to the response. The second stage consists of a motor program which once initiated will run its full course without intervention.

This theory can also account for attentional demand, since

the executive system can combine predictable sequences of action and form larger units of action. In ballistic movements it is proposed that the single channel mechanism can operate directly through the motor program, that is to say, no time is spent in routine analysis by the executive system.

This proposition is well stated by Adams (1976):

"This is a compromise hypothesis which seems very difficult to test. It is insufficient to show that either the motor program or feedback are governing agents for movement (the issue which is at the center of our scientific eye at the moment). Rather it must be shown that both the motor program and feedback are operating and also, the circumstances of their interaction must be demonstrated." (p. 99)

Other Theories of The Locus of Variability

Evidence From Neurophysiology

Bizzi, Polit and Morasso (1976) conducted research aimed at understanding some of the mechanisms whereby the central nervous system terminates a given phase in a motor sequence and maintains a newly acquired position. Using normal, intact monkeys and deafferented monkeys, Bizzi et al. (1976) investigated the extent to which the termination of a centrally initiated head movement (coordinated eye-head response to the unexpected appearance of a stimulus in the animal's visual field), and the subsequent maintenance of posture, depended on the proprioceptive afferent input generated during the movement itself or, instead, the central programming of the movement.

Using vestibulectomized but otherwise intact monkeys, load

disturbances were applied unexpectedly at the beginning and throughout centrally initiated head movements. The aim was to provoke a proprioceptive response in all types of neck receptors and to observe the outcome of this stimulation on the final head position. In a second set of experiments the afferent input was interrupted by cutting servical and thoracic dorsal roots and observing how the absence of proprioceptive feedback affected final head position.

Results indicated that final head position was determined by a central pattern of neural impulses which was programmed and was not reset by afferent proprioceptive impulses generated during the movement. Furthermore, Bizzi et al. (1976) provided evidence to support the theory that final position is an equilibrium point dependent on the firing rate and recruitment of motor neurons, the length tension properties of the muscles involved and the passive elastic properties of external loads.

This work cast doubt on the role of proprioceptive feedback in the control of movement endpoints and also re-emphasized the role of length tension properties of the opposing muscle groups in determining the position of the limb in which torques in the two directions about the joint are equal. This idea was first posited by Crossman and Goodeve (1963) and termed the "mass-spring" view of motor control. It was later studied independently by Asatryan and Fel'dman (1965) and Fel'dman (1966a, 1966b).

Further work by Bizzi et al. (1978) has demonstrated that corrective responses to unexpected loading of muscles during a movement are only in small part due to reflexive activity. It would appear

that the majority of corrective action is due to the mechanical properties of the muscle itself.

"..showed that during the first 200msecs., the contribution of the neural component relative to the applied disturbance ranged from 10 to 30% of full compensation in deafferented animals and that a significant proportion (from 20 to 40%) of the total compensation was due to the intrinsic mechanical properties of the musculature." (Bizzi et al. 1978 p. 553)

Possibly the most important work conducted by Bizzi and Polit (1979) examined the processes controlling arm movements. Bizzi et al. examined normal, intact monkeys and monkeys with bilateral dorsal rhizotomy, (C2 - T3) performing forearm positioning tasks. In both cases the pointing tasks were performed without sight of the arm. During the experiments the arms were unexpectedly displaced prior to initiation of the movements. The intact monkeys were able to move accurately to the target. Similarly, this procedure yielded qualitatively the same results in deafferented monkeys. Bizzi et al (1979) suggest that these results can be explained by postulating that the motor program specifies, through the selection of a set of length tension properties in agonist and antagonist muscles, an equilibrium point between these two sets of muscles that correctly positions the arm in relation to the visual target.

The position is qualified by the suggestion that this process must be accompanied by a mechanism controlling arm velocity. Also, the mechanism by which the described process is initiated is still unknown. Bizzi et al (1979) state that:

"The postulated independence of the processes controlling velocity, indicates that a number of parallel processes underlie arm movement, and that motor control may be thought to be organised in a modular fashion." (p.193)

Results also demonstrated that displacing the arm from the body caused the responses of deafferented monkeys to become inaccurate, while the intact monkeys quickly compensated for the new relative position of the arm to the body. According to Bizzzi et al:

"The dramatic inability of the deafferented monkey to execute accurate pointing responses in an unusual postural setting or when a constant bias load was applied underscores the great importance of afferent feedback in updating and adjusting the execution of learned motor patterns when posture is changed." (p.193)

This evidence presented is, as Schmidt (1980) comments: "particularly damaging for an impulse timing view of motor programming, at least for this kind of movement." (p.151)

Evidence which tentatively supports the proposition of parallel processes in the control of movement is given by Falkenberg and Newell (1980). They report that reaction time, (the time between a start signal and the beginning of a movement) has been generally accepted as a measure of the processing demands of movement initiation. Kerr (1978) and Klapp (1976, 1978) suggested that variations in reaction time due to manipulation of various response parameters indicated the degree to which the parameter was a feature in response programming.

The only response parameter consistently seen to affect reaction

time, as reported earlier, has been movement time (Kerr, 1978; Klapp et al, 1974). However, Falkenberg and Newell (1980) suggest that initiation time differences attributed to movement time could equally have been explained by variations in average velocity. They cite the work of Klapp and Erwin (1976) in which, as average velocity of movement increased, initiation time decreased in a systematic fashion. Newell et al (1979) demonstrated further, that different movement time amplitude combinations, which generate the same mean velocities, had similar initiation times. Falkenberg and Newell state that:

"It seems, therefore, that average velocity rather than movement time may be the key kinematic parameter determining response initiation time." (p.761)

Falkenberg and Newell (1980) demonstrated, using self-timed movements, simple response techniques, and choice response techniques, that initiation time decreased as average velocity of movement increased.

Conclusions from this research should be treated with caution however, since, as demonstrated by Schmidt et al (1978), initiation time covaried with velocity and also impulse force. According to Falkenberg and Newell (1980):

"Indeed it seems entirely reasonable that the system is programmed around the force-time or impulse requirements of the response, which are dictated by the mass of the system being moved, together with the kinematic demands particularly average velocity, of the criterion response. In other words, kinematic requirements may be mere concomitants or determiners of programming rather than features of the program." (p.767)

Although the theory that control and coordination of movement may be partly based on the viscous and elastic properties of the muscle joint system, has only recently been recognized, it was proposed as early as 1947 by Bernstein (reported in Bernstein, 1967). Bernstein suggested that when muscles acting at a joint are constrained to act as a unit, the linkage is describeable as a class of vibrating system whose physical and behavioural characteristics are qualitatively similar to a mass-spring. Asatryan and Feldman (1965) and Feldman (1966) demonstrated that when subjects were required to hold a constant angle at the elbow joint against a resistance, changes in the load resulted in changes in joint angle that were predictable as the behaviour of a non-linear spring.

Kelso and Holt (1980) suggest that this mass-spring account of limb localization reduces many of the problems confronting theorists in movement control.

"Perhaps its major characteristic for our purpose is that it is intrinsically self equilibrating; once set in motion the spring will always come to the same resting length for any particular load value. Neither an increase in the initial deflection of the spring from its resting length nor temporary perturbations will prevent the achievement of the equilibrium point...." (p.409)

One concern of theorists has been to explain how the brain accommodates variability in the context within which movements occur; labelled by Turvey et al (1978) as "context-conditional variability." Simply, this refers to the lack of an invariant relationship between centrally generated signals and movement autocues, what Schmidt (1978,

1979) would call motor-output variability. Since the mass-spring disregards initial conditions and is impervious to perturbations of movement trajectory, it goes some way to alleviating this problem.

Aslo of concern is how end point might be achieved through a variety of movement trajectories and diverse kinematic details such as velocity and amplitude. According to Kelso and Holt (1980) it is not the kinematic details but the underlying dynamic parameters of mass, stiffness and viscosity that are important in the regulation of movement. Specification of these dynamic parameters determines kinematic details and variability in these parameters will effect the equilibrium process only in terms of the observed kinematics but not in achievement of equilibrium position.

Kelso and Holt (1980) have attempted to determine whether any of the observed kinematic characteristics that occur in localization violate the mass-spring model. One prediction is that production of terminal location will be superior to production of amplitude since terminal location is specified by a motor program as an equilibrium point. However, amplitude production requires programming of new equilibrium points as the initial conditions vary. Kelso and Holt (1980) demonstrated that reproduction of location is hardly affected by changes in initial starting point, whereas amplitude reproduction reflects a bias to reproduce location.

"....the data are consonant with the equifinality characteristic of a mass-spring system. That is, despite changes in initial conditions (displacement of a limb to a new starting position) a mass-spring system will always reach an invariant final position or equilibrium as determined by its parameters."

Further, Kelso and Holt demonstrated that accuracy of movements was not affected by perturbations which again supports the mass-spring view.

Cooke and Eastman (1977) and Evarts and Granit (1976) have proposed fast acting feedback loops, acting in a closed loop manner, to account for these findings. However, Kelso and Holt (1980), using a wrist-cuff technique, demonstrated that performance in a localization task showed no significant difference between perturbed and non-perturbed trials, even in the absence of sensory feedback.

While the mass-spring theory of limb localization appears to account for many observed phenomena in movement, the applicability of this engineering analogy to the human muscular system is open to some dispute. Houk (1976) demonstrated that when loaded, skeletal muscle fails to demonstrate the same characteristic elastic properties of springs as suggested by Bizzi et al (1976, 1978); Polit and Bizzi (1979); Kelso and Holt (1980) and by earlier worker (Bernstein, 1947; Crossman and Goodeve, 1963). In fact, Houk (1976) demonstrated that the spring analogy to muscle breaks down if the muscle is stretched by only 1% of its original length. Houk goes on to propose that the important property of muscle in the control of limb localization is the property of 'stiffness' which is the function of length and tension.

This theory is well supported by evidence from neuromuscular physiology which has demonstrated the presence of fast acting feedback loops which may be responsible for adjusting stiffness of the muscle throughout movement (Garnett & Stephens, 1980;

Buller, Garnett & Stephens, 1980). Furthermore, many deafferentation studies demonstrate loss of fine motor coordination of deafferented limbs while gross accuracy is maintained. This observation led Glencross (1977) to propose a two tier model of movement control which is paralleled by the current theories of alpha-gamma coactivation as the means of movement control.

Clearly, therefore, while the 'mass-spring' has attracted a great deal of attention from psychologists, its enthusiastic reception must be tempered by a regard for the evidence from neuromuscular physiologists and engineers.

Summary and Conclusions

This chapter has presented a number of conceptual approaches to the theories of movement control. The early work of Fitts' (1954) emphasized an information processing approach to movement control. The theory stated that if repetitive movements of average amplitude are speeded up then each movement can provide less information and, therefore, variability in the movement or its duration will increase. Accounting for this theory, Crossman and Goodeve (1963) proposed a system of control based on the continual monitoring of feedback. The most contradictory evidence to this point of view comes from study of deafferentation in which decrements in performance were not noted in the absence of sensory feedback.

Schmidt et al (1978, 1979) in examining the locus of variability in movement, proposed an impulse timing representation of movement control. Such a theory suggested that variability in

movement endpoint was due to variability in force production and time production mechanisms. However, while Fitts' law is seen to hold for longer amplitude, slow movements, Schmidts law accomodates only short duration, ballistic type movements.

The existence of two, independent methods of movement control would appear excessively complicated. Most recent studies, especially those concerned with deafferentation have favoured a method of movement control which takes advantage of the passive elastic properties of the agonist and antagonist muscles. The mass-spring theory proposes that final limb position is an equilibrium point based on the firing rate and recruitment of motor units, the length tension properties of the muscles involved and the passive elastic properties of the loaded muscles. This theory was first proposed by Crossman and Goodevé (1963) and has recently been supported by the work of Bizzi et al. (1974, 1978); Polit and Bizzi (1979) and Kelso and Holt (1980). Such a theory accomodates the observations that final endpoints can be achieved by a number of varying trajectories, velocities and forces. This view of movement control and the evidence to support it, are particularly damning for the impulse timing view of control. Impulse timing hypothesises that if the mass of a limb is increased then the time production mechanism will meter out the same length of time and since the force is maintained then the limb will fall short of the target. However, this situation is not observed as increasing the mass of the limb (Polit & Bizzi, 1979) does not prevent acquisition of the target. This supports the mass-spring view of control.

Although the mass-spring theory of movement control is regarded, even by Schmidt and McGown (1980) as damaging to the motor output variability theory, one or two questions still remain. Polit and Bizzi (1979) have proposed that although the mass-spring theory accounts for correct positioning of limbs, it must be accompanied by a mechanism which controls limb velocity. It is proposed that these mechanisms underlying limb movement are independent but act in parallel.

Reaction time is generally accepted as a measure of processing demands and variations in reaction time due to manipulation of response parameters indicate the degree to which a parameter is a feature in response programming. The only response parameter consistently seen to affect reaction time has been movement time (Klapp et al , 1974; Kerr, 1978). However, Falkenberg and Newell (1980) have shown that these variations in reaction time could equally be attributed to variations in average velocity. As a result, the possibility still remains that the system is programmed around the force-time or impulse requirements of the response, since Schmidt et al (1978) demonstrated that reaction time varied not only with velocity but also with impulse force.

It could be that the theory of Schmidt et al although not speaking directly to this point, account for the proposed parallel process governing velocity described by Polit and Bizzi (1979).

APPENDIX B

Figure A shows the rate of change of velocity with time as represented in digital values per second. This data was obtained from the accelerometer during one trial from one subject performing a 40 cm. movement. Digital values have been adjusted by subtracting 200 from each value in order to reduce the length of the Y axis. 312 digital values, therefore, represents zero acceleration. Values below 312 represent acceleration, while those above 312 represent deceleration. Due to noise in the system and the extreme sensitivity of the accelerometer, a small fluctuation around the zero value is present even when the accelerometer is at rest.

Time has been partitioned into four units:

1. Represents time from the presentation of the signal to move to the initiation of the response by the subject.

This is, therefore, a measure of reaction time.

2. Represents the time during the movement in which the limb undergoes acceleration. This is the time of acceleration.

The area under the curve bounded by the two lines of 2 represents the accelerative impulse.

3. Represents the time during the movement in which the limb undergoes deceleration. This is the time of deceleration.

The area under the curve bounded by the two lines of 3 represents the decelerative impulse.

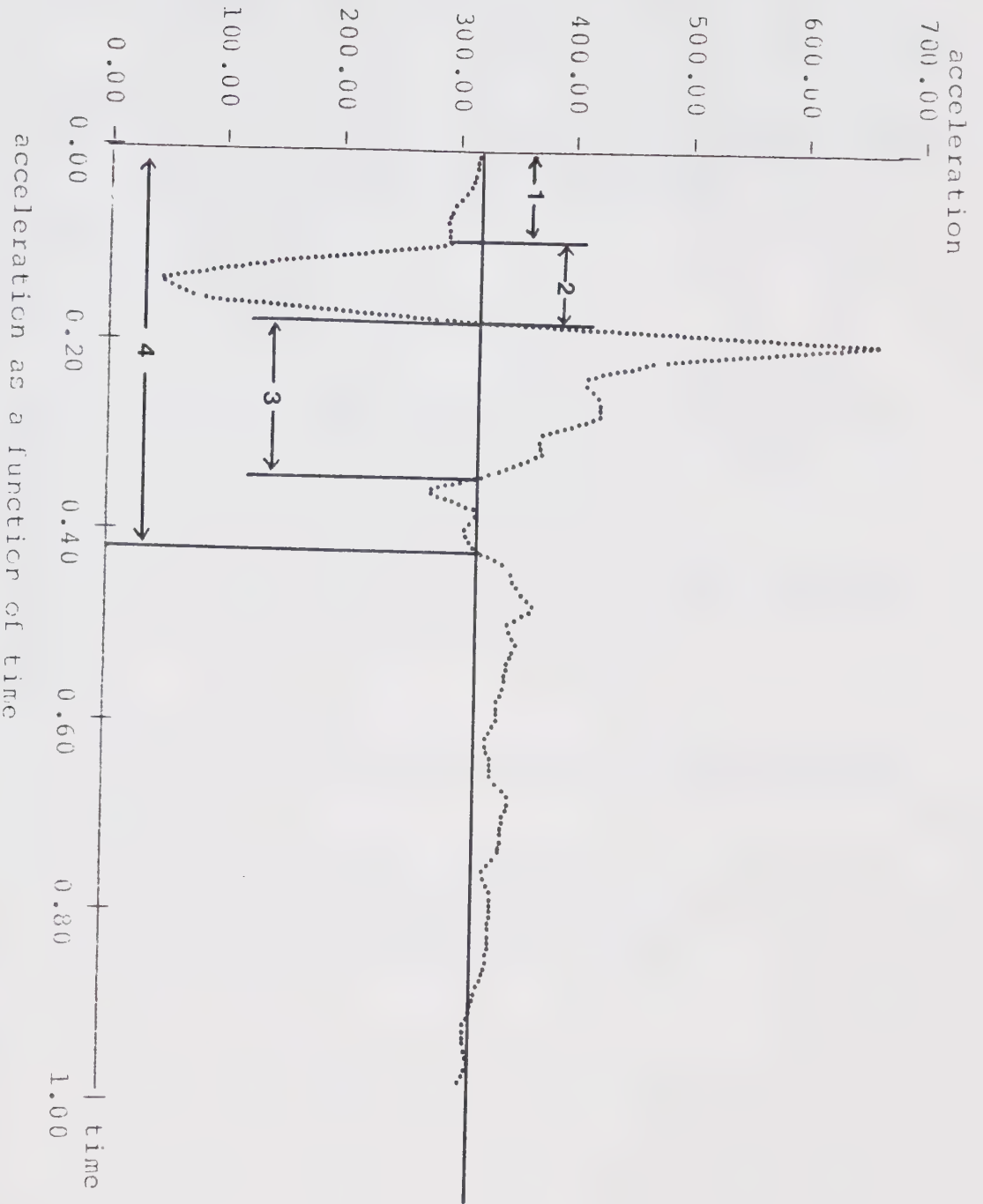


Figure A

Digitally coded analog data from accelerometer for one trial for a single subject performing a 40 cm. movement.

4. Represents the time from the presentation of the signal to move to the completion of the response by the subject. This is a measure of the total movement time.

The computer was programmed to calculate the variables listed for each trial completed under each amplitude of movement. Results were printed in tabular form.

Figure B shows the displacement as measured in digital values over time for a single trial by one subject performing a 40 cm. movement. The data has been partitioned into two units:

1. Represents the distance in digital values that the subject moved prior to the initiation of a correction.
2. Represents the distance moved in digital values following a correction.

The computer was programmed to calculate these distances for each trial performed for each amplitude of movement.

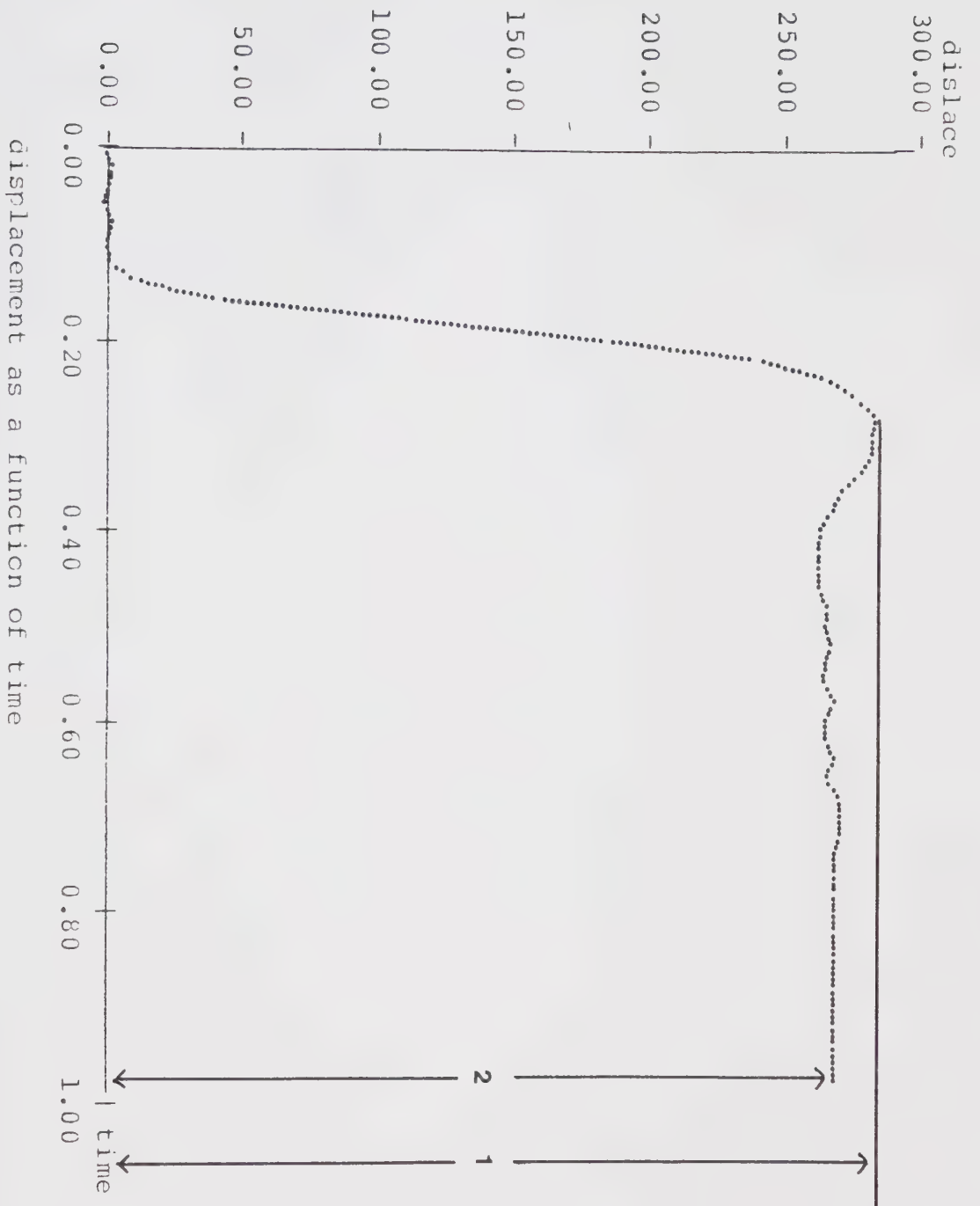


Figure B

Shows displacement in digital values for a subject performing
a single trial of amplitude 40 cm.

APPENDIX C

Table
Analysis of Variance

Experiment 1

Variable: Reaction Time

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 1 | 2011376.0 | 22.00* |
| AMPLITUDE (A) | 2 | 43368.000 | 3.00 |
| GP X A | 2 | 33416.000 | 2.31 |
| TRIALS (T) | 19 | 3238.7368 | 1.25 |
| GP X T | 19 | 2654.3157 | 1.02 |
| A X T | 38 | 2013.4736 | 0.92 |
| GP X A X T | 38 | 2086.3157 | 0.95 |
| SUBJECTS (S) | 19 | 192474.00 | |
| GP X S | 18 | 91424.000 | |
| GP X A X S | 36 | 14474.219 | |
| GP X T X S | 342 | 2600.5140 | |
| GP X A X T X S | 684 | 2185.1460 | |

Table
Analysis of Variance

Experiment 1 Variable: Time of Acceleration

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 14005.500 | 5.94* |
| AMPLITUDE (A) | 2 | 47720.000 | 46.05* |
| GP X A | 4 | 717.25000 | 0.69 |
| TRIALS (T) | 19 | 265.31367 | 0.97 |
| GP X T | 38 | 197.63158 | 0.72 |
| A X T | 38 | 288.52612 | 1.08 |
| GP X A X T | 76 | 215.77631 | 0.81 |
| SUBJECTS (S) | 29 | 3161.2700 | |
| GP X S | 27 | 2358.0000 | |
| GP X A X S | 54 | 1036.3500 | |
| GP X T X S | 513 | 274.27000 | |
| GP X A X T X S | 1026 | 265.93000 | |

* $p < .05$

Table
Analysis of Variance

Experiment 1 Variable: Time of Deceleration

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 93208.000 | 4.84* |
| AMPLITUDE (A) | 2 | 110776.00 | 8.21* |
| GP X A | 4 | 2459.9990 | 0.18 |
| TRIALS (T) | 19 | 2189.4736 | 0.34 |
| GP X T | 38 | 8003.7891 | 1.23 |
| A X T | 38 | 5663.5781 | 0.91 |
| GP X A X T | 76 | 5367.5781 | 0.86 |
| SUBJECTS (S) | 29 | 24354.650 | |
| GP X S | 27 | 19253.333 | |
| GP X A X S | 54 | 13494.219 | |
| GP X T X S | 513 | 6492.2200 | |
| GP X A X T X S | 1026 | 6206.7900 | |

* $p < .05$

Table
Analysis of Variance

Experiment 1 Variable: Distance Moved Prior to Correction

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 6728.0000 | 0.93 |
| AMPLITUDE (A) | 2 | 4341160.0 | 1479.9* |
| GP X A | 4 | 536.00000 | 0.18 |
| TRIALS (T) | 19 | 946.52612 | 1.25 |
| GP X T | 38 | 693.05249 | 0.91 |
| A X T | 38 | 906.10522 | 1.15 |
| GP X A X T | 76 | 950.10522 | 0.11 |
| SUBJECTS (S) | 29 | 7163.5860 | |
| GP X S | 27 | 7195.8500 | |
| GP X A X S | 54 | 2933.3300 | |
| GP X T X S | 513 | 758.20600 | |
| GP X A X T X S | 1026 | 787.94500 | |

* $p < .05$

Table

Analysis of Variance

Experiment 1

Variable: Distance Moved Following Correction

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 1512.0000 | 0.55 |
| AMPLITUDE (A) | 2 | 4813840.0 | 7110.1 * |
| GP X A | 4 | 980.00000 | 1.45 |
| TRIALS (T) | 19 | 103.57893 | 0.53 |
| GP X T | 38 | 98.526306 | 0.50 |
| A X T | 38 | 234.10526 | 1.19 |
| GP X A X T | 76 | 261.69000 | 1.33 |
| SUBJECTS (S) | 29 | 2680.2700 | |
| GP X S | 27 | 2766.8100 | |
| GP X A X S | 54 | 677.03000 | |
| GP X T X S | 513 | 197.17700 | |
| GP X A X T X S | 1026 | 196.19000 | |

* $p < .05$

Table
Analysis of Variance

Experiment 1 Variable: Accelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|---------------------------|----------|
| TREATMENT GROUP (GP) | 2 | 724.836 x 10 ⁶ | 7.74* |
| AMPLITUDE (A) | 2 | 187.800 x 10 ⁷ | 60.32* |
| GP X A | 4 | 31401984.0 | 1.01 |
| TRIALS (T) | 19 | 5200008.00 | 1.19 |
| GP X T | 38 | 4566069.00 | 1.03 |
| A X T | 38 | 5357244.00 | 1.21 |
| GP X A X T | 76 | 5167481.00 | 1.16 |
| SUBJECTS (S) | 29 | 2743766.00 | |
| GP X S | 27 | 93658832.0 | |
| GP X A X S | 54 | 31187696.0 | |
| GP X T X S | 513 | 4436630.00 | |
| GP X A X T X S | 1026 | 4444391.00 | |

* $p < .05$

Table
Analysis of Variance

Experiment 1 Variable: Decelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|--------------------------|----------|
| TREATMENT GROUP (GP) | 2 | 886.01 x 10 ⁶ | 1.72 |
| AMPLITUDE (A) | 2 | 428.84 x 10 ⁷ | 31.22* |
| GP X A | 4 | 29163520.0 | 0.21 |
| TRIALS (T) | 19 | 30156896.0 | 0.56 |
| GP X T | 38 | 42531136.0 | 0.79 |
| A X T | 38 | 41296288.0 | 0.84 |
| GP X A X T | 76 | 37907392.0 | 0.77 |
| SUBJECTS (S) | 29 | 1621202.40 | |
| GP X S | 27 | 514799620.0 | |
| GP X A X S | 54 | 137342820.0 | |
| GP X T X S | 513 | 53545584.00 | |
| GP X A X T X S | 1026 | 49029536.00 | |

* $p < .05$

Table

Analysis of Variance

Experiment 1

Variable: S.D. Duration of Accelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 138.630 | 5.83* |
| AMPLITUDE (A) | 2 | 59.1750 | 2.248 |
| GP X A | 4 | 15.4830 | 0.58 |
| SUBJECTS (S) | 29 | 31.6900 | |
| GP X S | 27 | 23.7690 | |
| GP X A X S | 54 | 26.3220 | |

* $p < .05$

Table

Analysis of Variance

Experiment 1

Variable: S.D. Duration of Decelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 11292.75 | 4.902* |
| AMPLITUDE (A) | 2 | 107.7500 | 0.062 |
| GP X A | 4 | 710.0780 | 0.407 |
| SUBJECTS (S) | 29 | 2923.580 | |
| GP X S | 27 | 2303.630 | |
| GP X A X S | 54 | 1745.890 | |

* $p < .05$

Table

Analysis of Variance

Experiment 1 Variable: S.D. Accelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|------------|----------|
| TREATMENT GROUP (GP) | 2 | 1021717.00 | 2.036 |
| AMPLITUDE (A) | 2 | 2821120.00 | 9.482* |
| GP X A | 4 | 38400.0000 | 0.128 |
| SUBJECTS (S) | 29 | | |
| GP X S | 27 | 501826.130 | |
| GP X A X S | 54 | 299633.750 | |

*p < .05

Table

Analysis of Variance

Experiment 1

Variable: S.D. Decelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | | 1.369 |
| AMPLITUDE (A) | 2 | | 4.981* |
| GP X A | 4 | | 0.491 |
| SUBJECTS (S) | 29 | | |
| GP X S | 27 | | |
| GP X A X S | 54 | | |

* $p < .05$

Table

Analysis of Variance

Experiment 1

Variable: S.D. Distance Moved Prior to Correction

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 9.24800 | 0.122 |
| AMPLITUDE (A) | 2 | 1607.19 | 26.532* |
| GP X A | 4 | 57.3400 | 0.947 |
| SUBJECTS (S) | 29 | 70.9400 | |
| GP X S | 27 | 75.5130 | |
| GP X A X S | 54 | 60.5740 | |

* $p < .05$

Table

Analysis of Variance

Experiment 1

Variable: S.D. Distance Moved Following Correction

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|----------------------|-----------|-----------|----------|
| TREATMENT GROUP (GP) | 2 | 2.1780 | 0.233 |
| AMPLITUDE (A) | 2 | 220.41 | 20.926* |
| GP X A | 4 | 5.8180 | 0.552 |
| SUBJECTS (S) | 29 | 8.8490 | |
| GP X S | 27 | 9.3440 | |
| GP X A X S | 54 | 10.533 | |

* $p < .05$

Table

Analysis of Variance

Experiment 2

Variable: Reaction Time

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 14521.9 | 2.10 |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 13550.5 | 1.129 |
| SUBJECTS (S) | 4 | 93988.2 | |
| A X PTW | 4 | 13082.1 | 1.816 |
| A X S | 8 | 6914.04 | |
| PTW X S | 8 | 11993.9 | |
| A X PTW X S | 16 | 7201.81 | |

Table

Analysis of Variance

Experiment 2

Variable: Duration of Accelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 1844.796 | 18.915* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 291.4450 | 5.985* |
| SUBJECTS (S) | 4 | 26.44100 | |
| A X PTW | 4 | 113.6640 | 1.344 |
| A X S | 8 | 97.52900 | |
| PTW X S | 8 | 48.69100 | |
| A X PTW X S | 16 | 84.57200 | |

* $p < .05$

Table
Analysis of Variance

Experiment 2 Variable: Duration of Decelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 7946.670 | 7.029* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 224.8090 | 1.137 |
| SUBJECTS (S) | 4 | 1603.608 | |
| A X PTW | 4 | 1233.877 | 2.820 |
| A X S | 8 | 1130.548 | |
| PTW X S | 8 | 197.7250 | |
| A X PTW X S | 16 | 437.4260 | |

* $p < .05$

Table
Analysis of Variance

Experiment 2

Variable: Movement Time

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 41595.73 | 5.213* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 18749.68 | 1.232 |
| SUBJECTS (S) | 4 | 136598.0 | |
| A X PTW | 4 | 12177.49 | 0.578 |
| A X S | 8 | 7976.488 | |
| PTW X S | 8 | 15216.74 | |
| A X PTW X S | 16 | 6069.438 | |

* $p < .05$

Table

Analysis of Variance

Experiment 2

Variable: Accelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|------------|----------|
| AMPLITUDE (A) | 2 | 57522718.0 | 45.92* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 2520564.00 | 2.789 |
| SUBJECTS (S) | 4 | 19618000.0 | |
| A X PTW | 4 | 989102.000 | 1.481 |
| A X S | 8 | 1252668.00 | |
| PTW X S | 8 | 903544.000 | |
| A X PTW X S | 16 | 667482.000 | |

* $p < .05$

Table
Analysis of Variance

Experiment 2 Variable: Decelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|------------|----------|
| AMPLITUDE (A) | 2 | 145684050 | 6.864* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 15866323.0 | 1.746 |
| SUBJECTS (S) | 4 | 120411130 | |
| A X PTW | 4 | 35478570.0 | 3.252* |
| A X S | 8 | 21223240.0 | |
| PTW X S | 8 | 9089092.00 | |
| A X PTW X S | 16 | 10909311.0 | |

* $p < .05$

Table

Analysis of Variance

Experiment 2

Variable: Distance Moved Prior to Correction

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 98916.92 | 159.290* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 946.8380 | 3.102* |
| SUBJECTS (S) | 4 | 1386.915 | |
| A X PTW | 4 | 441.2110 | 2.928 |
| A X S | 8 | 620.9810 | |
| PTW X S | 8 | 305.1380 | |
| A X PTW X S | 16 | 150.652 | |

*p < .05

Table

Analysis of Variance

Experiment 2

Variable: Distance Moved Following Correction

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 109572.1 | 239.430* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 506.621 | 1.813 |
| SUBJECTS (S) | 4 | 284.961 | |
| A X PTW | 4 | 151.057 | 2.403 |
| A X S | 8 | 457.626 | |
| PTW X S | 8 | 279.433 | |
| A X PTW X S | 16 | 62.8200 | |

* $p < .05$

Table

Analysis of Variance

Experiment 2

Variable: S.D. Distance Moved Prior to Correction

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 1979.77 | 11.96* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 40.6350 | 5.05* |
| SUBJECTS (S) | 4 | 228.753 | |
| A X PTW | 4 | 234.735 | 2.44 |
| A X S | 8 | 165.431 | |
| PTW X S | 8 | 8.04800 | |
| A X PTW X S | 16 | 96.2300 | |

* $p < .05$

Table

Analysis of Variance

Experiment 2 Variable: S.D. Duration of Accelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 748.480 | 1.276 |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 715.765 | 2.375 |
| SUBJECTS (S) | 4 | 112.673 | |
| A X PTW | 4 | 698.384 | 2.039 |
| A X S | 8 | 586.551 | |
| PTW X S | 8 | 301.388 | |
| A X PTW X S | 16 | 342.348 | |

Table
Analysis of Variance
Experiment 2 Variable: S.D. Duration of Decelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 8042.14 | 5.539* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 617.765 | 1.746 |
| SUBJECTS (S) | 4 | 3767.49 | |
| A X PTW | 4 | 2853.16 | 2.215 |
| A X S | 8 | 1451.84 | |
| PTW X S | 8 | 353.744 | |
| A X PTW X S | 16 | 1288.28 | |

* $p < .05$

Table

Analysis of Variance

Experiment 2

Variable: S.D. Accelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|-----------|----------|
| AMPLITUDE (A) | 2 | 2844753.0 | 4.68* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 721466.00 | 3.47 |
| SUBJECTS (S) | 4 | 62335.000 | |
| A X PTW | 4 | 527763.0 | 1.87 |
| A X S | 8 | 607734.0 | |
| PTW X S | 8 | 208001.0 | |
| A X PTW X S | 16 | 281419.0 | |

* $p < .05$

Table

Analysis of Variance

Experiment 2

Variable: S.D. Decelerative Impulse

| SOURCE | <u>DF</u> | <u>MS</u> | <u>F</u> |
|-------------------|-----------|------------|----------|
| AMPLITUDE (A) | 2 | 11460300.0 | 6.53* |
| PERIPHERAL TARGET | | | |
| WIDTH (PTW) | 2 | 8303421.00 | 1.16 |
| SUBJECTS (S) | 4 | 67239232.0 | |
| A X PTW | 4 | 40652767.0 | 2.24 |
| A X S | 8 | 17561313.0 | |
| PTW X S | 8 | 7163444.00 | |
| A X PTW X S | 16 | 18118271.0 | |

* $p < .05$

APPENDIX D

Raw Data from Experiments One and Two

The data for experiment one is organized in the following manner:-

| | | |
|---------|-------|----------------------------------------|
| Column | 1 | Treatment Condition |
| Columns | 2-3 | Amplitude of Movement |
| Columns | 4-5 | Subject Number |
| Columns | 6-7 | Trial Number |
| Columns | 9-11 | Reaction Time |
| Columns | 13-15 | Duration of Accelerative Impulse |
| Columns | 17-19 | Duration of Decelerative Impulse |
| Columns | 21-23 | Movement Time |
| Columns | 25-27 | Distance Moved Without Correction |
| Columns | 29-31 | Distance Moved Following Correction |
| Columns | 33-37 | Accelerative Impulse |
| Columns | 39-43 | Decelerative Impulse |

For Experiment Two data will be found in the same columns.

Columns 1-6 are as follows:-

| | | |
|---------|-----|-------------------------|
| Column | 1 | Subject Number |
| Columns | 2-3 | Amplitude of Movement |
| Column | 4 | Peripheral Target Width |
| Columns | 5-6 | Trial Number |

EXPERIMENT 1

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100101 | 070 | 046 | 086 | 230 | 071 | 068 | 04010 | 07773 |
| 1100102 | 070 | 034 | 086 | 210 | 068 | 063 | 02268 | 07272 |
| 1100103 | 072 | 070 | 078 | 266 | 085 | 069 | 04254 | 06926 |
| 1100104 | 098 | 060 | 062 | 248 | 068 | 068 | 04994 | 04463 |
| 1100105 | 072 | 036 | 104 | 234 | 072 | 068 | 02278 | 09275 |
| 1100106 | 092 | 048 | 056 | 266 | 057 | 057 | 03082 | 04857 |
| 1100107 | 070 | 058 | 084 | 244 | 086 | 075 | 04838 | 06665 |
| 1100108 | 070 | 044 | 080 | 244 | 096 | 079 | 05455 | 09169 |
| 1100109 | 070 | 050 | 086 | 250 | 083 | 074 | 04962 | 06569 |
| 1100110 | 094 | 066 | 044 | 224 | 078 | 082 | 05839 | 03697 |
| 1100111 | 076 | 062 | 102 | 260 | 065 | 066 | 05843 | 09380 |
| 1100112 | 138 | 064 | 118 | 340 | 091 | 080 | 05742 | 10120 |
| 1100113 | 070 | 046 | 148 | 284 | 076 | 076 | 04167 | 15032 |
| 1100114 | 070 | 054 | 060 | 204 | 070 | 070 | 04207 | 06677 |
| 1100115 | 244 | 048 | 084 | 412 | 080 | 072 | 02380 | 06442 |
| 1100116 | 070 | 050 | 082 | 230 | 087 | 081 | 05542 | 07477 |
| 1100117 | 134 | 060 | 078 | 390 | 083 | 055 | 04836 | 08735 |
| 1100118 | 070 | 036 | 054 | 180 | 065 | 062 | 02595 | 06623 |
| 1100119 | 070 | 044 | 076 | 234 | 082 | 069 | 03869 | 07900 |
| 1100120 | 270 | 040 | 240 | 570 | 071 | 072 | 05868 | 22003 |
| 1200101 | 070 | 072 | 092 | 254 | 129 | 131 | 06642 | 08062 |
| 1200102 | 218 | 084 | 034 | 356 | 116 | 130 | 07882 | 03069 |
| 1200103 | 088 | 030 | 088 | 226 | 118 | 122 | 01267 | 08988 |
| 1200104 | 204 | 074 | 058 | 386 | 137 | 139 | 09184 | 05110 |
| 1200105 | 074 | 048 | 382 | 540 | 129 | 130 | 05095 | 39693 |
| 1200106 | 230 | 074 | 060 | 418 | 136 | 134 | 08978 | 06395 |
| 1200107 | 070 | 064 | 176 | 336 | 131 | 124 | 08714 | 23153 |
| 1200108 | 078 | 068 | 034 | 220 | 098 | 126 | 05390 | 01517 |
| 1200109 | 228 | 054 | 062 | 404 | 131 | 142 | 03248 | 05249 |
| 1200110 | 076 | 046 | 078 | 234 | 108 | 106 | 05138 | 09484 |
| 1200111 | 086 | 074 | 148 | 356 | 123 | 127 | 07367 | 15026 |
| 1200112 | 134 | 082 | 040 | 276 | 113 | 119 | 05445 | 01995 |
| 1200113 | 070 | 062 | 160 | 332 | 137 | 129 | 08945 | 18283 |
| 1200114 | 076 | 060 | 172 | 338 | 113 | 116 | 09048 | 30150 |
| 1200115 | 094 | 060 | 030 | 462 | 114 | 122 | 07570 | 02279 |
| 1200116 | 070 | 048 | 340 | 478 | 127 | 130 | 09102 | 58376 |
| 1200117 | 072 | 058 | 178 | 328 | 139 | 139 | 07448 | 18630 |
| 1200118 | 142 | 070 | 394 | 630 | 124 | 127 | 06955 | 55677 |
| 1200119 | 114 | 064 | 058 | 394 | 139 | 127 | 08820 | 08630 |
| 1200120 | 106 | 062 | 236 | 428 | 122 | 118 | 06268 | 28967 |
| 1400101 | 072 | 050 | 130 | 298 | 265 | 253 | 07301 | 14205 |
| 1400102 | 100 | 082 | 152 | 370 | 277 | 269 | 09632 | 17725 |
| 1400103 | 230 | 074 | 138 | 462 | 257 | 254 | 09937 | 16087 |
| 1400104 | 092 | 078 | 104 | 294 | 267 | 268 | 12194 | 13310 |
| 1400105 | 070 | 062 | 056 | 208 | 246 | 255 | 09196 | 10751 |
| 1400106 | 070 | 056 | 160 | 320 | 259 | 254 | 08206 | 16002 |
| 1400107 | 070 | 068 | 144 | 318 | 282 | 266 | 09830 | 15922 |
| 1400108 | 104 | 076 | 178 | 378 | 272 | 265 | 10672 | 18497 |
| 1400109 | 082 | 080 | 124 | 266 | 280 | 288 | 10974 | 11579 |
| 1400110 | 094 | 082 | 096 | 282 | 274 | 271 | 11483 | 14994 |
| 1400111 | 070 | 072 | 056 | 236 | 290 | 287 | 11762 | 12082 |
| 1400112 | 226 | 072 | 072 | 442 | 237 | 247 | 11283 | 11331 |
| 1400113 | 070 | 030 | 186 | 306 | 237 | 235 | 02070 | 21827 |
| 1400114 | 070 | 070 | 080 | 240 | 291 | 289 | 12552 | 15647 |
| 1400115 | 078 | 074 | 082 | 264 | 273 | 273 | 11416 | 13788 |
| 1400116 | 094 | 084 | 074 | 294 | 251 | 254 | 12015 | 13321 |
| 1400117 | 102 | 078 | 154 | 366 | 248 | 238 | 12399 | 18278 |
| 1400118 | 070 | 066 | 104 | 260 | 279 | 280 | 11181 | 12654 |
| 1400119 | 094 | 088 | 062 | 264 | 243 | 256 | 09494 | 09485 |
| 1400120 | 070 | 050 | 188 | 328 | 238 | 231 | 05667 | 22478 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100201 | 070 | 058 | 352 | 352 | 065 | 065 | 08330 | 17350 |
| 1100202 | 070 | 068 | 056 | 294 | 105 | 059 | 06959 | 10282 |
| 1100203 | 078 | 036 | 086 | 378 | 091 | 055 | 04089 | 10934 |
| 1100204 | 070 | 058 | 084 | 298 | 106 | 054 | 06368 | 12610 |
| 1100205 | 070 | 052 | 032 | 492 | 116 | 072 | 06373 | 11484 |
| 1100206 | 144 | 062 | 132 | 398 | 067 | 063 | 07133 | 19988 |
| 1100207 | 070 | 062 | 076 | 244 | 092 | 072 | 05440 | 09768 |
| 1100208 | 076 | 060 | 032 | 266 | 100 | 066 | 06953 | 22935 |
| 1100209 | 088 | 066 | 258 | 432 | 058 | 061 | 07742 | 28614 |
| 1100210 | 070 | 040 | 468 | 598 | 074 | 072 | 06722 | 51270 |
| 1100211 | 120 | 066 | 140 | 598 | 066 | 064 | 07867 | 19612 |
| 1100212 | 070 | 034 | 030 | 154 | 047 | 089 | 03817 | 13128 |
| 1100213 | 092 | 078 | 032 | 368 | 130 | 063 | 07644 | 04147 |
| 1100214 | 070 | 040 | 114 | 244 | 084 | 067 | 04949 | 22748 |
| 1100215 | 114 | 060 | 034 | 458 | 114 | 063 | 06454 | 01851 |
| 1100216 | 070 | 054 | 104 | 248 | 086 | 067 | 09041 | 17015 |
| 1100217 | 074 | 048 | 486 | 674 | 068 | 069 | 06425 | 05018 |
| 1100218 | 070 | 052 | 032 | 442 | 125 | 072 | 08211 | 02923 |
| 1100219 | 070 | 066 | 030 | 526 | 135 | 059 | 11559 | 04548 |
| 1100220 | 080 | 060 | 382 | 550 | 066 | 067 | 09199 | 04657 |
| 1200201 | 074 | 048 | 152 | 316 | 134 | 121 | 06077 | 12155 |
| 1200202 | 076 | 052 | 200 | 348 | 109 | 111 | 03590 | 09985 |
| 1200203 | 070 | 048 | 142 | 332 | 147 | 126 | 06225 | 11881 |
| 1200204 | 096 | 054 | 074 | 244 | 107 | 111 | 02375 | 04287 |
| 1200205 | 072 | 058 | 096 | 296 | 124 | 113 | 04403 | 06716 |
| 1200206 | 086 | 058 | 106 | 362 | 142 | 120 | 06727 | 09388 |
| 1200207 | 082 | 060 | 034 | 196 | 094 | 117 | 03780 | 01551 |
| 1200208 | 070 | 030 | 080 | 200 | 146 | 126 | 03753 | 14637 |
| 1200208 | 072 | 056 | 170 | 386 | 129 | 113 | 05230 | 17361 |
| 1200209 | 076 | 040 | 140 | 276 | 139 | 130 | 02603 | 11402 |
| 1200210 | 070 | 048 | 126 | 266 | 137 | 129 | 04437 | 12998 |
| 1200211 | 070 | 040 | 114 | 262 | 139 | 111 | 03819 | 14553 |
| 1200212 | 070 | 040 | 128 | 268 | 115 | 108 | 03460 | 11283 |
| 1200213 | 070 | 054 | 126 | 272 | 141 | 134 | 05476 | 13319 |
| 1200214 | 072 | 056 | 090 | 372 | 122 | 114 | 04773 | 08149 |
| 1200215 | 184 | 084 | 030 | 320 | 088 | 104 | 05124 | 04757 |
| 1200216 | 070 | 034 | 140 | 264 | 137 | 123 | 02493 | 13978 |
| 1200217 | 070 | 032 | 190 | 312 | 103 | 102 | 02686 | 21686 |
| 1200218 | 078 | 030 | 116 | 244 | 117 | 109 | 02966 | 12721 |
| 1200219 | 072 | 062 | 090 | 306 | 126 | 121 | 05931 | 08221 |
| 1200220 | 074 | 062 | 106 | 376 | 164 | 119 | 08652 | 13101 |
| 1400201 | 076 | 060 | 036 | 192 | 198 | 252 | 08423 | 02066 |
| 1400202 | 238 | 076 | 132 | 466 | 252 | 238 | 09730 | 21659 |
| 1400203 | 074 | 076 | 130 | 350 | 263 | 246 | 06930 | 14097 |
| 1400204 | 128 | 070 | 152 | 370 | 278 | 259 | 13308 | 25749 |
| 1400205 | 096 | 086 | 056 | 258 | 315 | 238 | 15495 | 13837 |
| 1400206 | 078 | 070 | 428 | 590 | 245 | 248 | 15946 | 29533 |
| 1400207 | 070 | 066 | 108 | 358 | 284 | 240 | 12917 | 17778 |
| 1400208 | 130 | 078 | 100 | 462 | 283 | 254 | 13940 | 15149 |
| 1400209 | 094 | 076 | 118 | 338 | 277 | 240 | 14105 | 25506 |
| 1400210 | 070 | 066 | 100 | 256 | 289 | 282 | 11919 | 16694 |
| 1400211 | 100 | 070 | 132 | 340 | 276 | 249 | 10879 | 21199 |
| 1400212 | 074 | 072 | 106 | 252 | 273 | 273 | 14393 | 16413 |
| 1400213 | 080 | 070 | 122 | 372 | 273 | 235 | 12519 | 20685 |
| 1400214 | 072 | 080 | 104 | 356 | 290 | 244 | 14559 | 19318 |
| 1400215 | 072 | 082 | 112 | 320 | 277 | 251 | 12313 | 18372 |
| 1400216 | 094 | 076 | 478 | 998 | 241 | 246 | 14037 | 61758 |
| 1400217 | 070 | 060 | 138 | 288 | 271 | 261 | 09924 | 20649 |
| 1400218 | 090 | 084 | 110 | 466 | 279 | 235 | 11139 | 16441 |
| 1400219 | 096 | 066 | 130 | 390 | 297 | 255 | 11437 | 15719 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1400220 | 128 | 068 | 034 | 250 | 235 | 238 | 12983 | 12728 |
| 1100301 | 080 | 030 | 060 | 192 | 075 | 055 | 01419 | 10663 |
| 1100302 | 070 | 030 | 496 | 634 | 057 | 058 | 01863 | 06398 |
| 1100303 | 070 | 030 | 076 | 196 | 090 | 073 | 01243 | 13885 |
| 1100304 | 082 | 030 | 066 | 196 | 060 | 060 | 00652 | 07276 |
| 1100305 | 074 | 038 | 094 | 250 | 092 | 061 | 03379 | 06852 |
| 1100306 | 072 | 040 | 068 | 210 | 100 | 073 | 04018 | 14868 |
| 1100307 | 070 | 044 | 074 | 244 | 095 | 066 | 04654 | 09177 |
| 1100308 | 070 | 056 | 066 | 240 | 140 | 068 | 07232 | 12506 |
| 1100309 | 070 | 038 | 068 | 238 | 097 | 057 | 04756 | 12018 |
| 1100310 | 070 | 030 | 066 | 188 | 072 | 055 | 01205 | 11905 |
| 1100311 | 070 | 036 | 058 | 186 | 062 | 053 | 01790 | 05730 |
| 1100312 | 070 | 058 | 074 | 252 | 093 | 066 | 04975 | 10883 |
| 1100313 | 070 | 038 | 070 | 198 | 103 | 086 | 03760 | 13061 |
| 1100314 | 070 | 030 | 068 | 196 | 088 | 071 | 02489 | 10290 |
| 1100315 | 072 | 030 | 442 | 564 | 065 | 065 | 01899 | 63588 |
| 1100316 | 070 | 052 | 110 | 266 | 059 | 049 | 06715 | 18405 |
| 1100317 | 074 | 030 | 080 | 210 | 084 | 063 | 02656 | 15620 |
| 1100318 | 070 | 044 | 064 | 240 | 091 | 059 | 03098 | 08925 |
| 1100319 | 070 | 040 | 362 | 362 | 061 | 061 | 03512 | 09632 |
| 1100320 | 070 | 042 | 068 | 218 | 118 | 071 | 04904 | 14683 |
| 1200301 | 078 | 056 | 078 | 242 | 139 | 138 | 07413 | 07902 |
| 1200302 | 072 | 050 | 124 | 268 | 153 | 141 | 04221 | 08929 |
| 1200303 | 074 | 062 | 094 | 252 | 115 | 107 | 06725 | 20425 |
| 1200304 | 080 | 064 | 122 | 258 | 146 | 126 | 10056 | 10881 |
| 1200305 | 072 | 038 | 124 | 244 | 132 | 129 | 04308 | 17244 |
| 1200306 | 070 | 036 | 110 | 249 | 139 | 121 | 05947 | 17721 |
| 1200307 | 076 | 030 | 086 | 212 | 138 | 117 | 01915 | 20895 |
| 1200309 | 070 | 042 | 090 | 252 | 135 | 110 | 06267 | 15126 |
| 1200310 | 070 | 062 | 078 | 242 | 137 | 124 | 07621 | 13611 |
| 1200311 | 072 | 052 | 082 | 238 | 165 | 142 | 07483 | 14373 |
| 1200312 | 072 | 030 | 096 | 218 | 126 | 119 | 01215 | 15729 |
| 1200313 | 070 | 034 | 082 | 214 | 166 | 142 | 07022 | 12991 |
| 1200314 | 070 | 030 | 104 | 226 | 140 | 131 | 04704 | 19106 |
| 1200315 | 070 | 038 | 082 | 220 | 139 | 118 | 05002 | 13543 |
| 1200316 | 070 | 048 | 078 | 282 | 156 | 128 | 07201 | 11807 |
| 1200317 | 070 | 030 | 072 | 192 | 158 | 147 | 04295 | 13444 |
| 1200318 | 070 | 034 | 094 | 250 | 153 | 136 | 05445 | 15002 |
| 1200319 | 070 | 034 | 064 | 188 | 162 | 142 | 02462 | 18243 |
| 1200320 | 084 | 058 | 084 | 252 | 163 | 141 | 09751 | 14980 |
| 1400301 | 074 | 052 | 040 | 326 | 197 | 250 | 08363 | 03297 |
| 1400302 | 080 | 056 | 130 | 332 | 255 | 235 | 07712 | 18090 |
| 1400303 | 070 | 056 | 146 | 292 | 246 | 239 | 08931 | 31493 |
| 1400304 | 070 | 034 | 046 | 170 | 174 | 230 | 05083 | 13608 |
| 1400305 | 072 | 068 | 092 | 608 | 306 | 247 | 10600 | 21177 |
| 1400306 | 070 | 030 | 136 | 256 | 234 | 223 | 02965 | 25504 |
| 1400307 | 084 | 046 | 120 | 272 | 252 | 243 | 03223 | 17667 |
| 1400308 | 092 | 072 | 126 | 354 | 263 | 246 | 11039 | 21075 |
| 1400309 | 088 | 072 | 110 | 400 | 301 | 258 | 11537 | 17301 |
| 1400310 | 070 | 050 | 050 | 516 | 240 | 252 | 08033 | 08951 |
| 1400311 | 070 | 040 | 130 | 262 | 260 | 242 | 07522 | 37354 |
| 1400312 | 070 | 054 | 130 | 314 | 274 | 251 | 10160 | 19074 |
| 1400313 | 070 | 032 | 422 | 544 | 252 | 256 | 04778 | 41378 |
| 1400314 | 070 | 062 | 366 | 518 | 250 | 250 | 11637 | 52720 |
| 1400315 | 070 | 054 | 106 | 312 | 253 | 244 | 08446 | 12958 |
| 1400316 | 072 | 058 | 118 | 404 | 283 | 248 | 10190 | 13623 |
| 1400317 | 070 | 032 | 038 | 410 | 201 | 241 | 05706 | 01884 |
| 1400318 | 070 | 034 | 128 | 296 | 261 | 238 | 06630 | 19057 |
| 1400319 | 078 | 072 | 030 | 200 | 220 | 256 | 11427 | 02613 |
| 1400320 | 070 | 062 | 030 | 182 | 219 | 263 | 11190 | 03207 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100401 | 110 | 050 | 102 | 286 | 076 | 060 | 03239 | 10642 |
| 1100402 | 104 | 052 | 114 | 294 | 069 | 047 | 03192 | 16609 |
| 1100403 | 076 | 050 | 038 | 184 | 068 | 077 | 02227 | 02029 |
| 1100404 | 092 | 066 | 110 | 288 | 077 | 062 | 03138 | 12102 |
| 1100405 | 096 | 054 | 066 | 414 | 088 | 065 | 04713 | 05939 |
| 1100406 | 080 | 076 | 070 | 328 | 083 | 055 | 07424 | 05620 |
| 1100407 | 070 | 050 | 112 | 252 | 060 | 053 | 02544 | 12125 |
| 1100408 | 076 | 052 | 090 | 244 | 083 | 064 | 03323 | 09174 |
| 1100409 | 080 | 050 | 124 | 274 | 053 | 049 | 03096 | 18276 |
| 1100410 | 080 | 062 | 074 | 316 | 094 | 063 | 05574 | 08840 |
| 1100411 | 118 | 062 | 066 | 382 | 086 | 061 | 05300 | 02832 |
| 1100412 | 110 | 060 | 044 | 506 | 097 | 063 | 04877 | 03151 |
| 1100413 | 084 | 054 | 082 | 246 | 074 | 053 | 02392 | 09373 |
| 1100414 | 078 | 066 | 074 | 252 | 073 | 060 | 05557 | 10264 |
| 1100415 | 070 | 044 | 098 | 232 | 071 | 056 | 02731 | 11403 |
| 1100416 | 070 | 052 | 136 | 278 | 049 | 048 | 02677 | 16928 |
| 1100417 | 116 | 048 | 390 | 702 | 063 | 069 | 03922 | 30406 |
| 1100418 | 132 | 052 | 138 | 342 | 052 | 049 | 04207 | 22977 |
| 1100419 | 126 | 046 | 088 | 282 | 076 | 061 | 04194 | 09105 |
| 1100420 | 072 | 046 | 078 | 216 | 065 | 049 | 02784 | 08962 |
| 1200401 | 072 | 060 | 124 | 280 | 146 | 124 | 04535 | 20053 |
| 1200402 | 136 | 052 | 078 | 434 | 159 | 118 | 03926 | 16826 |
| 1200403 | 070 | 080 | 058 | 228 | 132 | 141 | 05434 | 02999 |
| 1200404 | 090 | 076 | 080 | 266 | 152 | 144 | 06099 | 08188 |
| 1200405 | 102 | 070 | 128 | 326 | 129 | 116 | 04113 | 09178 |
| 1200406 | 092 | 090 | 058 | 454 | 147 | 132 | 06249 | 03533 |
| 1200407 | 092 | 078 | 062 | 252 | 144 | 144 | 06799 | 06202 |
| 1200408 | 084 | 062 | 122 | 288 | 129 | 115 | 02298 | 13599 |
| 1200409 | 100 | 090 | 062 | 272 | 163 | 157 | 07455 | 06696 |
| 1200410 | 088 | 066 | 116 | 304 | 143 | 122 | 05915 | 09677 |
| 1200411 | 110 | 070 | 108 | 308 | 152 | 143 | 02936 | 12709 |
| 1200412 | 080 | 064 | 042 | 206 | 126 | 143 | 04477 | 04758 |
| 1200413 | 102 | 090 | 066 | 278 | 146 | 138 | 06720 | 07444 |
| 1200414 | 104 | 070 | 104 | 298 | 137 | 125 | 06689 | 13133 |
| 1200415 | 116 | 064 | 112 | 406 | 133 | 108 | 03321 | 11970 |
| 1200416 | 072 | 082 | 072 | 356 | 154 | 129 | 06321 | 06685 |
| 1200417 | 074 | 070 | 108 | 272 | 130 | 117 | 05912 | 13017 |
| 1200418 | 070 | 070 | 046 | 206 | 146 | 151 | 06544 | 03844 |
| 1200419 | 122 | 064 | 070 | 332 | 140 | 115 | 05606 | 07132 |
| 1200420 | 120 | 058 | 120 | 324 | 123 | 116 | 03708 | 09334 |
| 1400401 | 164 | 084 | 116 | 492 | 285 | 236 | 09118 | 11292 |
| 1400402 | 102 | 086 | 036 | 244 | 199 | 246 | 06609 | 01354 |
| 1400403 | 082 | 090 | 120 | 482 | 263 | 227 | 06514 | 12541 |
| 1400404 | 116 | 090 | 048 | 274 | 232 | 267 | 07356 | 03173 |
| 1400405 | 094 | 088 | 170 | 460 | 258 | 229 | 04039 | 14060 |
| 1400406 | 074 | 076 | 164 | 340 | 269 | 249 | 04663 | 19032 |
| 1400407 | 120 | 096 | 130 | 490 | 279 | 251 | 07098 | 09741 |
| 1400408 | 086 | 098 | 126 | 436 | 288 | 240 | 09184 | 10027 |
| 1400409 | 070 | 082 | 134 | 362 | 266 | 233 | 06945 | 14511 |
| 1400410 | 082 | 092 | 198 | 392 | 261 | 253 | 07316 | 23365 |
| 1400411 | 070 | 080 | 116 | 394 | 291 | 242 | 07289 | 11927 |
| 1400412 | 072 | 090 | 162 | 350 | 252 | 234 | 04466 | 22243 |
| 1400413 | 118 | 098 | 142 | 384 | 263 | 244 | 06988 | 15241 |
| 1400414 | 086 | 076 | 120 | 312 | 263 | 241 | 06601 | 18458 |
| 1400415 | 072 | 078 | 044 | 214 | 228 | 259 | 05061 | 05128 |
| 1400416 | 074 | 056 | 092 | 242 | 266 | 267 | 05179 | 09984 |
| 1400417 | 086 | 080 | 144 | 416 | 271 | 228 | 05459 | 17594 |
| 1400418 | 088 | 102 | 100 | 408 | 268 | 235 | 12122 | 08160 |
| 1400419 | 070 | 060 | 106 | 266 | 262 | 254 | 04576 | 11078 |
| 1400420 | 076 | 048 | 130 | 326 | 259 | 217 | 03620 | 18441 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100501 | 076 | 072 | 094 | 300 | 083 | 045 | 04435 | 10444 |
| 1100502 | 076 | 046 | 112 | 294 | 076 | 055 | 02979 | 08122 |
| 1100503 | 072 | 056 | 082 | 312 | 097 | 060 | 02990 | 11337 |
| 1100504 | 082 | 070 | 056 | 502 | 106 | 056 | 04911 | 06149 |
| 1100505 | 070 | 030 | 072 | 230 | 070 | 043 | 01057 | 10305 |
| 1100506 | 070 | 038 | 120 | 248 | 062 | 052 | 01694 | 17931 |
| 1100507 | 070 | 048 | 036 | 338 | 086 | 049 | 02933 | 05746 |
| 1100508 | 070 | 050 | 100 | 260 | 075 | 053 | 02298 | 10908 |
| 1100509 | 110 | 074 | 078 | 320 | 089 | 051 | 07218 | 06887 |
| 1100510 | 070 | 030 | 036 | 156 | 086 | 085 | 00621 | 06518 |
| 1100511 | 070 | 062 | 064 | 274 | 094 | 064 | 05129 | 08247 |
| 1100512 | 070 | 046 | 064 | 302 | 091 | 053 | 03922 | 06937 |
| 1100513 | 076 | 030 | 078 | 252 | 055 | 055 | 01153 | 07356 |
| 1100514 | 072 | 044 | 082 | 218 | 075 | 055 | 03498 | 03968 |
| 1100515 | 080 | 074 | 084 | 332 | 097 | 054 | 07153 | 07824 |
| 1100516 | 070 | 054 | 054 | 272 | 089 | 056 | 04042 | 05859 |
| 1100517 | 072 | 076 | 072 | 246 | 083 | 067 | 05694 | 06022 |
| 1100518 | 078 | 074 | 064 | 334 | 075 | 049 | 07136 | 04198 |
| 1100519 | 072 | 056 | 096 | 274 | 069 | 049 | 03415 | 12218 |
| 1100520 | 080 | 062 | 088 | 332 | 082 | 050 | 04731 | 10311 |
| 1200501 | 082 | 030 | 112 | 268 | 128 | 103 | 02331 | 13995 |
| 1200502 | 082 | 034 | 112 | 326 | 147 | 101 | 01775 | 13165 |
| 1200503 | 070 | 046 | 126 | 344 | 150 | 104 | 03601 | 17159 |
| 1200504 | 070 | 066 | 116 | 348 | 155 | 106 | 06614 | 23187 |
| 1200505 | 070 | 068 | 088 | 316 | 158 | 109 | 06840 | 09537 |
| 1200506 | 070 | 070 | 104 | 272 | 145 | 122 | 05905 | 11848 |
| 1200507 | 072 | 064 | 094 | 310 | 150 | 113 | 06816 | 12663 |
| 1200508 | 070 | 040 | 158 | 288 | 104 | 104 | 03381 | 21152 |
| 1200509 | 070 | 050 | 124 | 288 | 146 | 113 | 04649 | 18203 |
| 1200510 | 070 | 062 | 114 | 362 | 149 | 120 | 04349 | 12947 |
| 1200511 | 070 | 050 | 104 | 244 | 151 | 136 | 04413 | 13756 |
| 1200512 | 080 | 050 | 114 | 272 | 148 | 125 | 04721 | 15701 |
| 1200513 | 070 | 066 | 068 | 224 | 151 | 144 | 05012 | 07230 |
| 1200514 | 070 | 034 | 112 | 236 | 131 | 112 | 02794 | 18155 |
| 1200515 | 096 | 086 | 080 | 348 | 160 | 123 | 07613 | 09153 |
| 1200516 | 070 | 046 | 084 | 220 | 138 | 126 | 03184 | 10334 |
| 1200517 | 072 | 056 | 110 | 346 | 128 | 109 | 03733 | 10624 |
| 1200518 | 078 | 064 | 098 | 260 | 124 | 112 | 05469 | 11257 |
| 1200519 | 084 | 056 | 116 | 276 | 130 | 119 | 04318 | 17065 |
| 1200520 | 084 | 056 | 104 | 272 | 149 | 134 | 05336 | 10873 |
| 1400501 | 144 | 086 | 176 | 476 | 207 | 207 | 09294 | 30147 |
| 1400502 | 186 | 080 | 136 | 514 | 290 | 239 | 07267 | 16316 |
| 1400503 | 110 | 060 | 164 | 442 | 248 | 230 | 05847 | 16518 |
| 1400504 | 102 | 074 | 170 | 444 | 260 | 239 | 07292 | 17372 |
| 1400505 | 114 | 092 | 080 | 306 | 259 | 258 | 08708 | 09177 |
| 1400506 | 084 | 076 | 144 | 324 | 252 | 244 | 08153 | 16640 |
| 1400507 | 086 | 084 | 030 | 220 | 203 | 256 | 06178 | 01323 |
| 1400508 | 090 | 056 | 138 | 412 | 253 | 209 | 05321 | 21799 |
| 1400509 | 078 | 098 | 090 | 408 | 278 | 247 | 08889 | 12620 |
| 1400510 | 070 | 076 | 174 | 322 | 253 | 250 | 08148 | 20423 |
| 1400511 | 098 | 098 | 078 | 286 | 243 | 241 | 07220 | 09197 |
| 1400512 | 082 | 086 | 070 | 392 | 278 | 232 | 09217 | 10403 |
| 1400513 | 098 | 084 | 094 | 296 | 276 | 268 | 08756 | 15790 |
| 1400514 | 084 | 080 | 110 | 294 | 252 | 244 | 07860 | 14313 |
| 1400515 | 106 | 082 | 048 | 256 | 230 | 258 | 05398 | 06465 |
| 1400516 | 092 | 090 | 142 | 422 | 257 | 231 | 07352 | 14284 |
| 1400517 | 072 | 088 | 190 | 372 | 242 | 232 | 05580 | 28132 |
| 1400518 | 072 | 096 | 090 | 278 | 264 | 264 | 04062 | 10313 |
| 1400519 | 080 | 100 | 144 | 344 | 248 | 239 | 08120 | 13405 |
| 1400520 | 074 | 078 | 164 | 398 | 247 | 225 | 07115 | 13209 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100601 | 071 | 030 | 076 | 544 | 066 | 059 | 00933 | 03621 |
| 1100602 | 082 | 040 | 044 | 186 | 057 | 077 | 00594 | 01520 |
| 1100603 | 134 | 052 | 084 | 290 | 079 | 077 | 02556 | 03072 |
| 1100604 | 086 | 074 | 030 | 600 | 060 | 065 | 03821 | 00196 |
| 1100605 | 150 | 034 | 032 | 328 | 046 | 060 | 01247 | 01434 |
| 1100606 | 082 | 042 | 034 | 178 | 047 | 060 | 01195 | 01467 |
| 1100607 | 174 | 032 | 034 | 352 | 046 | 047 | 00478 | 00148 |
| 1100608 | 174 | 054 | 338 | 800 | 066 | 065 | 03072 | 11280 |
| 1100609 | 086 | 032 | 378 | 516 | 055 | 051 | 01218 | 08529 |
| 1100610 | 102 | 056 | 030 | 208 | 057 | 068 | 02753 | 00472 |
| 1100611 | 071 | 030 | 076 | 544 | 066 | 059 | 00933 | 03621 |
| 1100612 | 082 | 040 | 044 | 186 | 057 | 077 | 00594 | 01520 |
| 1100613 | 134 | 052 | 084 | 290 | 079 | 077 | 02556 | 03072 |
| 1100614 | 086 | 074 | 030 | 600 | 060 | 065 | 03821 | 00196 |
| 1100615 | 150 | 034 | 032 | 328 | 046 | 060 | 01247 | 01434 |
| 1100616 | 082 | 042 | 034 | 178 | 047 | 060 | 01195 | 01467 |
| 1100617 | 174 | 032 | 034 | 352 | 046 | 047 | 00478 | 00148 |
| 1100618 | 174 | 054 | 338 | 800 | 066 | 065 | 03072 | 11280 |
| 1100619 | 086 | 032 | 378 | 516 | 055 | 051 | 01218 | 08529 |
| 1100620 | 102 | 056 | 030 | 208 | 057 | 068 | 02753 | 00472 |
| 1200601 | 142 | 030 | 130 | 332 | 110 | 109 | 00446 | 06677 |
| 1200602 | 134 | 030 | 096 | 280 | 102 | 103 | 00509 | 04603 |
| 1200603 | 254 | 057 | 142 | 468 | 133 | 128 | 02096 | 06856 |
| 1200604 | 130 | 030 | 216 | 396 | 109 | 106 | 00715 | 09874 |
| 1200605 | 070 | 052 | 124 | 270 | 131 | 127 | 02644 | 05304 |
| 1200606 | 070 | 056 | 830 | 996 | 120 | 122 | 02748 | 20734 |
| 1200607 | 264 | 070 | 048 | 402 | 120 | 131 | 05122 | 01615 |
| 1200608 | 118 | 030 | 154 | 322 | 106 | 102 | 01156 | 05080 |
| 1200609 | 358 | 034 | 052 | 464 | 114 | 122 | 01609 | 01678 |
| 1200610 | 230 | 060 | 096 | 446 | 128 | 124 | 04170 | 06094 |
| 1200611 | 152 | 030 | 102 | 304 | 106 | 104 | 01287 | 05430 |
| 1200612 | 102 | 056 | 032 | 210 | 080 | 101 | 02234 | 00810 |
| 1200613 | 128 | 068 | 094 | 718 | 157 | 134 | 05026 | 05886 |
| 1200614 | 164 | 030 | 100 | 284 | 114 | 114 | 01624 | 06581 |
| 1200615 | 158 | 034 | 102 | 314 | 108 | 103 | 01714 | 03696 |
| 1200616 | 118 | 056 | 030 | 224 | 092 | 115 | 03056 | 01816 |
| 1200617 | 178 | 038 | 030 | 266 | 091 | 117 | 02464 | 01723 |
| 1200618 | 112 | 030 | 106 | 290 | 121 | 113 | 01012 | 07634 |
| 1200619 | 112 | 060 | 082 | 276 | 129 | 129 | 04133 | 05249 |
| 1200620 | 154 | 030 | 080 | 288 | 104 | 101 | 01235 | 05026 |
| 1400601 | 070 | 074 | 060 | 224 | 218 | 235 | 04483 | 05242 |
| 1400602 | 126 | 072 | 172 | 380 | 237 | 235 | 04031 | 07866 |
| 1400603 | 102 | 052 | 230 | 426 | 232 | 235 | 04018 | 08947 |
| 1400604 | 088 | 090 | 038 | 236 | 171 | 205 | 07650 | 00305 |
| 1400605 | 098 | 072 | 258 | 772 | 252 | 249 | 04311 | 42972 |
| 1400606 | 118 | 086 | 034 | 260 | 177 | 218 | 08704 | 01149 |
| 1400607 | 098 | 092 | 030 | 240 | 174 | 213 | 09142 | 01503 |
| 1400608 | 106 | 088 | 292 | 520 | 242 | 243 | 03081 | 23341 |
| 1400609 | 128 | 054 | 096 | 298 | 215 | 222 | 02291 | 07758 |
| 1400610 | 184 | 056 | 032 | 292 | 144 | 182 | 03140 | 01980 |
| 1400611 | 112 | 090 | 272 | 494 | 249 | 248 | 08825 | 08822 |
| 1400612 | 278 | 080 | 186 | 658 | 249 | 245 | 04304 | 11547 |
| 1400613 | 130 | 084 | 040 | 274 | 171 | 201 | 06529 | 00782 |
| 1400614 | 106 | 074 | 064 | 244 | 188 | 221 | 04708 | 02152 |
| 1400615 | 148 | 074 | 180 | 422 | 253 | 252 | 05844 | 15694 |
| 1400616 | 170 | 032 | 272 | 612 | 221 | 228 | 01325 | 15905 |
| 1400617 | 184 | 102 | 130 | 336 | 191 | 216 | 10751 | 01306 |
| 1400618 | 136 | 060 | 122 | 365 | 252 | 254 | 02947 | 09922 |
| 1400619 | 080 | 086 | 418 | 600 | 248 | 250 | 02767 | 17760 |
| 1400620 | 110 | 084 | 114 | 332 | 239 | 241 | 05790 | 08658 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100701 | 070 | 074 | 040 | 406 | 074 | 053 | 04845 | 00581 |
| 1100702 | 078 | 046 | 066 | 220 | 069 | 062 | 02945 | 05634 |
| 1100703 | 070 | 030 | 034 | 246 | 066 | 062 | 03044 | 01249 |
| 1100704 | 084 | 030 | 434 | 996 | 054 | 059 | 00648 | 02459 |
| 1100705 | 090 | 048 | 060 | 218 | 057 | 050 | 01810 | 09062 |
| 1100706 | 092 | 052 | 030 | 194 | 063 | 065 | 03087 | 00184 |
| 1100707 | 156 | 064 | 070 | 578 | 078 | 068 | 03514 | 06084 |
| 1100708 | 074 | 062 | 044 | 218 | 064 | 060 | 07864 | 03434 |
| 1100709 | 070 | 030 | 426 | 526 | 053 | 055 | 01546 | 02345 |
| 1100710 | 086 | 038 | 030 | 172 | 065 | 068 | 01452 | 02510 |
| 1100711 | 142 | 074 | 030 | 306 | 072 | 062 | 07343 | 01291 |
| 1100712 | 118 | 066 | 060 | 264 | 072 | 065 | 10206 | 08366 |
| 1100713 | 146 | 056 | 052 | 278 | 052 | 051 | 03361 | 05843 |
| 1100714 | 112 | 044 | 060 | 240 | 077 | 071 | 03526 | 03411 |
| 1100715 | 188 | 044 | 058 | 370 | 091 | 065 | 04362 | 08745 |
| 1100716 | 078 | 054 | 052 | 214 | 067 | 055 | 02712 | 03939 |
| 1100717 | 070 | 032 | 070 | 196 | 060 | 062 | 02590 | 08592 |
| 1100718 | 072 | 038 | 030 | 160 | 051 | 067 | 01044 | 00923 |
| 1100719 | 086 | 030 | 072 | 208 | 060 | 053 | 01688 | 10657 |
| 1100720 | 070 | 036 | 054 | 180 | 069 | 063 | 01769 | 05697 |
| 1200701 | 084 | 052 | 040 | 196 | 118 | 133 | 03661 | 02663 |
| 1200702 | 104 | 072 | 082 | 278 | 156 | 148 | 03510 | 11388 |
| 1200703 | 074 | 056 | 146 | 296 | 137 | 133 | 02000 | 13574 |
| 1200704 | 312 | 070 | 074 | 478 | 136 | 130 | 05485 | 06162 |
| 1200705 | 120 | 050 | 084 | 288 | 130 | 129 | 01991 | 04818 |
| 1200706 | 094 | 070 | 054 | 238 | 124 | 132 | 03927 | 01009 |
| 1200707 | 090 | 052 | 030 | 192 | 098 | 125 | 02679 | 01229 |
| 1200708 | 086 | 060 | 052 | 218 | 122 | 139 | 02990 | 04203 |
| 1200709 | 118 | 074 | 052 | 266 | 127 | 127 | 04458 | 01667 |
| 1200710 | 102 | 072 | 032 | 226 | 131 | 141 | 05937 | 00932 |
| 1200711 | 078 | 042 | 066 | 206 | 120 | 130 | 01648 | 03466 |
| 1200712 | 128 | 082 | 082 | 394 | 137 | 127 | 05171 | 08191 |
| 1200713 | 122 | 052 | 082 | 276 | 160 | 149 | 03009 | 11495 |
| 1200714 | 080 | 060 | 062 | 602 | 133 | 121 | 04266 | 06792 |
| 1200715 | 108 | 060 | 078 | 272 | 103 | 104 | 02117 | 08054 |
| 1200716 | 104 | 076 | 084 | 464 | 150 | 111 | 01510 | 08146 |
| 1200717 | 144 | 042 | 050 | 256 | 095 | 123 | 01099 | 01331 |
| 1200718 | 104 | 070 | 070 | 352 | 743 | 129 | 05429 | 06902 |
| 1200719 | 076 | 064 | 030 | 190 | 109 | 128 | 05475 | 01758 |
| 1200720 | 220 | 064 | 076 | 382 | 142 | 134 | 03318 | 08558 |
| 1400701 | 070 | 038 | 030 | 158 | 185 | 241 | 03316 | 01551 |
| 1400702 | 070 | 034 | 444 | 568 | 233 | 234 | 03679 | 39157 |
| 1400703 | 070 | 050 | 030 | 170 | 197 | 239 | 04708 | 01581 |
| 1400704 | 074 | 030 | 048 | 172 | 227 | 249 | 02013 | 06404 |
| 1400705 | 132 | 100 | 098 | 394 | 259 | 247 | 05676 | 10128 |
| 1400706 | 070 | 082 | 178 | 350 | 243 | 242 | 06722 | 19118 |
| 1400707 | 070 | 044 | 044 | 178 | 209 | 246 | 05407 | 03788 |
| 1400708 | 070 | 050 | 392 | 412 | 249 | 249 | 05635 | 26236 |
| 1400709 | 076 | 030 | 094 | 220 | 234 | 230 | 01101 | 16631 |
| 1400710 | 074 | 054 | 074 | 222 | 225 | 221 | 06217 | 11574 |
| 1400711 | 070 | 066 | 072 | 436 | 230 | 243 | 07239 | 09141 |
| 1400712 | 070 | 030 | 040 | 160 | 178 | 223 | 03184 | 03297 |
| 1400713 | 072 | 034 | 040 | 166 | 195 | 243 | 04028 | 02224 |
| 1400714 | 070 | 068 | 100 | 258 | 257 | 255 | 06915 | 12933 |
| 1400715 | 070 | 058 | 030 | 178 | 195 | 220 | 06194 | 02297 |
| 1400716 | 070 | 032 | 228 | 376 | 225 | 227 | 03374 | 19871 |
| 1400717 | 070 | 070 | 062 | 222 | 238 | 250 | 08026 | 08362 |
| 1400718 | 070 | 048 | 040 | 178 | 212 | 254 | 06377 | 02511 |
| 1400719 | 092 | 056 | 030 | 198 | 182 | 239 | 06519 | 02044 |
| 1400720 | 070 | 080 | 032 | 202 | 207 | 234 | 09704 | 01573 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100801 | 074 | 034 | 092 | 220 | 068 | 066 | 00906 | 06103 |
| 1100802 | 070 | 032 | 036 | 158 | 048 | 056 | 02358 | 01428 |
| 1100803 | 070 | 056 | 402 | 900 | 064 | 061 | 06493 | 07118 |
| 1100804 | 074 | 048 | 096 | 240 | 074 | 072 | 02335 | 05153 |
| 1100805 | 094 | 074 | 030 | 218 | 068 | 078 | 05541 | 01090 |
| 1100806 | 070 | 034 | 328 | 452 | 044 | 056 | 01680 | 24117 |
| 1100807 | 070 | 066 | 060 | 422 | 074 | 059 | 04844 | 04644 |
| 1100808 | 074 | 030 | 072 | 196 | 069 | 059 | 01074 | 10141 |
| 1100809 | 070 | 030 | 052 | 436 | 100 | 059 | 01115 | 10555 |
| 1100810 | 070 | 068 | 066 | 556 | 098 | 057 | 06518 | 11583 |
| 1100811 | 070 | 048 | 074 | 256 | 076 | 058 | 03023 | 06616 |
| 1100812 | 070 | 042 | 082 | 214 | 070 | 064 | 01819 | 08449 |
| 1100813 | 080 | 040 | 032 | 172 | 051 | 058 | 02077 | 01479 |
| 1100814 | 076 | 054 | 030 | 180 | 055 | 068 | 02962 | 00608 |
| 1100815 | 070 | 044 | 154 | 288 | 061 | 057 | 02944 | 10368 |
| 1100816 | 070 | 040 | 106 | 278 | 063 | 060 | 01377 | 10981 |
| 1100817 | 070 | 032 | 036 | 158 | 058 | 071 | 00786 | 02383 |
| 1100818 | 070 | 032 | 106 | 242 | 075 | 063 | 01763 | 09202 |
| 1100819 | 090 | 070 | 064 | 226 | 066 | 076 | 04542 | 02091 |
| 1100820 | 082 | 042 | 038 | 186 | 061 | 063 | 03540 | 01799 |
| 1200801 | 084 | 076 | 032 | 202 | 101 | 117 | 05844 | 01115 |
| 1200802 | 072 | 080 | 060 | 282 | 139 | 108 | 08192 | 10520 |
| 1200803 | 082 | 074 | 044 | 220 | 175 | 125 | 08866 | 05445 |
| 1200804 | 090 | 040 | 036 | 186 | 102 | 118 | 02499 | 02537 |
| 1200805 | 088 | 074 | 430 | 612 | 121 | 123 | 09856 | 27593 |
| 1200806 | 084 | 074 | 048 | 226 | 157 | 149 | 07868 | 07870 |
| 1200807 | 086 | 046 | 386 | 406 | 117 | 118 | 05026 | 10571 |
| 1200808 | 088 | 064 | 064 | 236 | 132 | 128 | 05630 | 09722 |
| 1200809 | 158 | 084 | 064 | 354 | 163 | 143 | 07996 | 09587 |
| 1200810 | 072 | 078 | 550 | 776 | 119 | 118 | 06648 | 24068 |
| 1200811 | 094 | 042 | 088 | 244 | 108 | 110 | 02252 | 06713 |
| 1200812 | 070 | 064 | 044 | 198 | 132 | 134 | 06206 | 06734 |
| 1200813 | 070 | 074 | 034 | 198 | 149 | 160 | 07873 | 05765 |
| 1200814 | 108 | 068 | 034 | 230 | 112 | 126 | 05650 | 03771 |
| 1200815 | 082 | 042 | 072 | 216 | 136 | 124 | 04876 | 09554 |
| 1200816 | 102 | 078 | 408 | 608 | 109 | 117 | 07742 | 04779 |
| 1200817 | 072 | 072 | 106 | 724 | 130 | 124 | 07234 | 10282 |
| 1200818 | 070 | 072 | 064 | 226 | 121 | 116 | 05665 | 06351 |
| 1200819 | 108 | 072 | 384 | 584 | 105 | 115 | 08713 | 20126 |
| 1200820 | 076 | 042 | 302 | 440 | 113 | 117 | 06598 | 24383 |
| 1400801 | 070 | 030 | 046 | 166 | 167 | 200 | 03441 | 05867 |
| 1400802 | 070 | 078 | 034 | 526 | 172 | 242 | 07933 | 00983 |
| 1400803 | 070 | 066 | 258 | 414 | 245 | 242 | 02803 | 33221 |
| 1400804 | 070 | 082 | 050 | 240 | 228 | 253 | 06794 | 05138 |
| 1400805 | 090 | 054 | 046 | 210 | 167 | 211 | 05076 | 07208 |
| 1400806 | 080 | 072 | 470 | 646 | 238 | 238 | 07330 | 37432 |
| 1400807 | 074 | 070 | 196 | 610 | 239 | 246 | 06412 | 26687 |
| 1400808 | 072 | 060 | 146 | 298 | 240 | 237 | 05652 | 15311 |
| 1400809 | 070 | 064 | 058 | 212 | 180 | 216 | 04262 | 10851 |
| 1400810 | 070 | 048 | 042 | 480 | 165 | 245 | 05508 | 01945 |
| 1400811 | 070 | 030 | 158 | 316 | 226 | 226 | 03065 | 14776 |
| 1400812 | 070 | 030 | 094 | 436 | 242 | 225 | 02411 | 19684 |
| 1400813 | 070 | 050 | 034 | 174 | 166 | 209 | 05291 | 01750 |
| 1400814 | 072 | 062 | 030 | 184 | 169 | 207 | 08233 | 05244 |
| 1400815 | 070 | 050 | 492 | 734 | 242 | 247 | 04922 | 34482 |
| 1400816 | 072 | 074 | 156 | 364 | 245 | 244 | 05678 | 07313 |
| 1400817 | 070 | 030 | 046 | 166 | 168 | 202 | 02329 | 02955 |
| 1400818 | 130 | 082 | 282 | 514 | 229 | 231 | 07812 | 23476 |
| 1400819 | 082 | 094 | 168 | 366 | 259 | 253 | 05631 | 15503 |
| 1400820 | 070 | 032 | 078 | 200 | 240 | 245 | 02506 | 15577 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1100901 | 208 | 048 | 030 | 306 | 054 | 071 | 00830 | 01604 |
| 1100902 | 086 | 058 | 098 | 262 | 072 | 069 | 01722 | 04078 |
| 1100903 | 272 | 044 | 056 | 382 | 057 | 075 | 00986 | 01121 |
| 1100904 | 082 | 040 | 034 | 166 | 054 | 067 | 00740 | 01773 |
| 1100905 | 074 | 056 | 042 | 194 | 074 | 079 | 02213 | 02481 |
| 1100906 | 108 | 050 | 040 | 218 | 069 | 075 | 01988 | 01982 |
| 1100907 | 168 | 054 | 036 | 278 | 054 | 063 | 01609 | 00819 |
| 1100908 | 202 | 038 | 036 | 296 | 057 | 067 | 02118 | 01147 |
| 1100909 | 140 | 036 | 036 | 232 | 067 | 072 | 01634 | 01400 |
| 1100910 | 086 | 038 | 098 | 274 | 082 | 067 | 01516 | 08046 |
| 1100911 | 082 | 032 | 038 | 172 | 066 | 072 | 01315 | 01887 |
| 1100912 | 074 | 050 | 042 | 186 | 073 | 075 | 02328 | 03737 |
| 1100913 | 078 | 050 | 046 | 184 | 070 | 079 | 02235 | 02030 |
| 1100914 | 108 | 050 | 038 | 216 | 068 | 077 | 01426 | 02807 |
| 1100915 | 078 | 044 | 032 | 174 | 058 | 070 | 01722 | 01497 |
| 1100916 | 086 | 030 | 032 | 168 | 059 | 073 | 00557 | 02222 |
| 1100917 | 088 | 036 | 032 | 176 | 064 | 074 | 01299 | 01773 |
| 1100918 | 086 | 036 | 030 | 172 | 046 | 057 | 01638 | 00890 |
| 1100919 | 074 | 032 | 230 | 356 | 062 | 059 | 01368 | 01853 |
| 1100920 | 084 | 048 | 032 | 184 | 073 | 079 | 02964 | 02103 |
| 1200901 | 076 | 068 | 034 | 204 | 082 | 103 | 03306 | 00525 |
| 1200902 | 074 | 060 | 082 | 236 | 138 | 136 | 03638 | 08562 |
| 1200903 | 074 | 072 | 032 | 198 | 102 | 118 | 05283 | 00804 |
| 1200904 | 082 | 046 | 030 | 178 | 088 | 114 | 02460 | 01789 |
| 1200905 | 102 | 066 | 040 | 228 | 105 | 120 | 02772 | 02723 |
| 1200906 | 094 | 046 | 054 | 214 | 120 | 125 | 03979 | 04969 |
| 1200907 | 168 | 064 | 030 | 282 | 093 | 114 | 04420 | 02073 |
| 1200908 | 088 | 048 | 042 | 198 | 102 | 121 | 02812 | 02871 |
| 1200909 | 076 | 066 | 042 | 204 | 108 | 124 | 03125 | 03560 |
| 1200910 | 074 | 064 | 090 | 248 | 136 | 137 | 04189 | 07376 |
| 1200911 | 070 | 050 | 032 | 172 | 090 | 111 | 02042 | 02235 |
| 1200912 | 074 | 050 | 058 | 202 | 116 | 118 | 01438 | 07170 |
| 1200913 | 070 | 052 | 032 | 174 | 092 | 114 | 01816 | 02231 |
| 1200914 | 102 | 050 | 054 | 226 | 117 | 125 | 03668 | 05456 |
| 1200915 | 080 | 064 | 032 | 196 | 090 | 113 | 02625 | 02150 |
| 1200916 | 080 | 066 | 036 | 210 | 101 | 115 | 04505 | 02478 |
| 1200917 | 270 | 074 | 030 | 394 | 100 | 129 | 06280 | 00188 |
| 1200918 | 112 | 064 | 046 | 232 | 113 | 134 | 04939 | 01244 |
| 1200919 | 108 | 058 | 030 | 216 | 103 | 123 | 15110 | 01281 |
| 1200920 | 072 | 066 | 030 | 188 | 089 | 119 | 04598 | 02097 |
| 1400901 | 090 | 066 | 162 | 338 | 230 | 233 | 01565 | 13150 |
| 1400902 | 072 | 060 | 136 | 288 | 228 | 236 | 03857 | 08947 |
| 1400903 | 162 | 046 | 186 | 414 | 254 | 255 | 01456 | 14484 |
| 1400904 | 098 | 074 | 084 | 280 | 225 | 236 | 05530 | 04397 |
| 1400905 | 108 | 074 | 066 | 274 | 207 | 223 | 04825 | 04799 |
| 1400906 | 150 | 092 | 030 | 292 | 190 | 218 | 07953 | 00954 |
| 1400907 | 088 | 084 | 074 | 576 | 250 | 246 | 07676 | 04338 |
| 1400908 | 084 | 076 | 068 | 252 | 233 | 240 | 06866 | 05430 |
| 1400909 | 082 | 090 | 032 | 224 | 201 | 226 | 07416 | 02228 |
| 1400910 | 112 | 094 | 036 | 262 | 202 | 227 | 05960 | 03307 |
| 1400911 | 070 | 092 | 030 | 212 | 192 | 226 | 05786 | 01627 |
| 1400912 | 260 | 060 | 178 | 518 | 249 | 245 | 02262 | 18720 |
| 1400913 | 156 | 076 | 206 | 816 | 268 | 262 | 05214 | 10774 |
| 1400914 | 126 | 094 | 056 | 296 | 206 | 218 | 05222 | 03733 |
| 1400915 | 092 | 070 | 284 | 568 | 245 | 249 | 04137 | 22849 |
| 1400916 | 134 | 086 | 034 | 274 | 201 | 228 | 08872 | 01842 |
| 1400917 | 148 | 064 | 114 | 536 | 253 | 252 | 05127 | 10126 |
| 1400918 | 100 | 086 | 158 | 364 | 264 | 263 | 06850 | 12812 |
| 1400919 | 080 | 048 | 278 | 562 | 246 | 251 | 02850 | 17052 |
| 1400920 | 102 | 096 | 100 | 318 | 254 | 263 | 06815 | 10475 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 1101001 | 082 | 030 | 066 | 244 | 083 | 060 | 00769 | 09292 |
| 1101002 | 082 | 042 | 048 | 192 | 065 | 079 | 00907 | 02446 |
| 1101003 | 086 | 060 | 072 | 308 | 089 | 075 | 03057 | 08561 |
| 1101004 | 110 | 052 | 072 | 452 | 090 | 060 | 02814 | 07297 |
| 1101005 | 084 | 038 | 104 | 258 | 097 | 080 | 01544 | 07981 |
| 1101006 | 086 | 056 | 078 | 242 | 085 | 078 | 02179 | 06570 |
| 1101007 | 104 | 060 | 062 | 324 | 080 | 063 | 03257 | 06510 |
| 1101008 | 100 | 058 | 076 | 260 | 081 | 069 | 01859 | 07337 |
| 1101009 | 096 | 030 | 064 | 228 | 265 | 064 | 01130 | 06815 |
| 1101010 | 106 | 050 | 080 | 258 | 102 | 064 | 01718 | 08134 |
| 1101011 | 106 | 078 | 058 | 286 | 091 | 065 | 04960 | 08193 |
| 1101012 | 128 | 030 | 068 | 258 | 081 | 072 | 01653 | 06823 |
| 1101013 | 078 | 064 | 058 | 543 | 079 | 070 | 03921 | 04894 |
| 1101014 | 078 | 046 | 074 | 268 | 072 | 063 | 02105 | 06681 |
| 1101015 | 126 | 046 | 092 | 284 | 088 | 068 | 01145 | 07035 |
| 1101016 | 082 | 030 | 066 | 244 | 083 | 060 | 00769 | 09292 |
| 1101017 | 082 | 042 | 048 | 192 | 065 | 079 | 00907 | 02446 |
| 1101018 | 086 | 060 | 072 | 308 | 089 | 075 | 03057 | 08561 |
| 1101019 | 110 | 052 | 072 | 452 | 090 | 060 | 02814 | 07297 |
| 1101020 | 084 | 038 | 104 | 258 | 097 | 080 | 01544 | 07981 |
| 1201001 | 070 | 054 | 108 | 252 | 146 | 146 | 02753 | 09330 |
| 1201002 | 088 | 060 | 094 | 264 | 135 | 130 | 04542 | 08081 |
| 1201003 | 070 | 062 | 070 | 406 | 128 | 126 | 04531 | 07648 |
| 1201004 | 084 | 030 | 106 | 248 | 133 | 129 | 04847 | 07400 |
| 1201005 | 082 | 050 | 114 | 272 | 132 | 131 | 02252 | 09178 |
| 1201006 | 094 | 056 | 092 | 292 | 147 | 142 | 04319 | 06654 |
| 1201007 | 108 | 030 | 118 | 276 | 125 | 122 | 04609 | 10741 |
| 1201008 | 112 | 048 | 034 | 214 | 089 | 112 | 01545 | 01725 |
| 1201009 | 080 | 052 | 128 | 280 | 130 | 132 | 03284 | 08600 |
| 1201010 | 072 | 034 | 452 | 578 | 114 | 116 | 01345 | 17555 |
| 1201011 | 112 | 048 | 220 | 400 | 131 | 128 | 02190 | 11561 |
| 1201012 | 086 | 050 | 094 | 258 | 125 | 118 | 02672 | 09381 |
| 1201013 | 070 | 052 | 212 | 354 | 126 | 126 | 03117 | 14434 |
| 1201014 | 098 | 034 | 090 | 242 | 119 | 114 | 04293 | 11513 |
| 1201015 | 224 | 036 | 068 | 492 | 126 | 122 | 02641 | 04753 |
| 1201016 | 074 | 052 | 472 | 618 | 121 | 119 | 03444 | 20486 |
| 1201017 | 072 | 062 | 088 | 232 | 137 | 147 | 03663 | 05422 |
| 1201018 | 078 | 068 | 118 | 284 | 137 | 136 | 04655 | 11177 |
| 1201019 | 116 | 044 | 112 | 292 | 127 | 122 | 01651 | 11265 |
| 1201020 | 088 | 030 | 178 | 316 | 119 | 114 | 04456 | 16433 |
| 1401001 | 086 | 080 | 092 | 346 | 268 | 245 | 07200 | 14962 |
| 1401002 | 072 | 058 | 122 | 284 | 254 | 250 | 04179 | 17810 |
| 1401003 | 070 | 078 | 066 | 234 | 259 | 260 | 07382 | 05432 |
| 1401004 | 070 | 066 | 108 | 374 | 264 | 243 | 05769 | 10969 |
| 1401005 | 078 | 078 | 148 | 324 | 243 | 242 | 05753 | 15110 |
| 1401006 | 070 | 074 | 168 | 332 | 262 | 253 | 05880 | 11882 |
| 1401007 | 070 | 052 | 620 | 784 | 236 | 234 | 02339 | 41020 |
| 1401008 | 072 | 096 | 066 | 234 | 278 | 278 | 09618 | 09107 |
| 1401009 | 084 | 074 | 124 | 302 | 259 | 252 | 05384 | 18860 |
| 1401010 | 070 | 074 | 112 | 374 | 250 | 242 | 04614 | 12262 |
| 1401011 | 082 | 064 | 060 | 226 | 205 | 230 | 03986 | 03501 |
| 1401012 | 070 | 062 | 120 | 486 | 262 | 250 | 05686 | 16817 |
| 1401013 | 076 | 078 | 096 | 708 | 244 | 251 | 05880 | 10765 |
| 1401014 | 088 | 062 | 034 | 224 | 201 | 242 | 07220 | 01235 |
| 1401015 | 070 | 074 | 040 | 204 | 194 | 238 | 05177 | 01960 |
| 1401016 | 070 | 058 | 144 | 292 | 245 | 243 | 03805 | 16835 |
| 1401017 | 072 | 094 | 132 | 318 | 252 | 246 | 06782 | 19332 |
| 1401018 | 070 | 046 | 128 | 282 | 248 | 238 | 04218 | 15931 |
| 1401019 | 090 | 072 | 128 | 310 | 250 | 247 | 05080 | 15736 |
| 1401020 | 080 | 102 | 088 | 290 | 265 | 269 | 08975 | 08420 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101101 | 270 | 064 | 434 | 788 | 050 | 050 | 02311 | 38147 |
| 2101102 | 204 | 062 | 358 | 998 | 053 | 053 | 03985 | 35644 |
| 2101103 | 184 | 066 | 084 | 354 | 087 | 066 | 02775 | 08991 |
| 2101104 | 312 | 060 | 082 | 478 | 090 | 072 | 02903 | 08219 |
| 2101105 | 180 | 062 | 088 | 350 | 075 | 057 | 04409 | 06448 |
| 2101106 | 226 | 048 | 032 | 326 | 069 | 086 | 01539 | 01660 |
| 2101107 | 202 | 068 | 126 | 416 | 057 | 053 | 05060 | 17416 |
| 2101108 | 230 | 060 | 130 | 340 | 078 | 089 | 04251 | 00508 |
| 2101109 | 254 | 046 | 116 | 436 | 060 | 042 | 01258 | 13257 |
| 2101110 | 190 | 066 | 086 | 370 | 079 | 060 | 04637 | 04406 |
| 2101111 | 214 | 060 | 032 | 326 | 083 | 096 | 02946 | 01520 |
| 2101112 | 204 | 058 | 074 | 392 | 069 | 057 | 04948 | 05323 |
| 2101113 | 170 | 056 | 092 | 398 | 069 | 047 | 02175 | 06272 |
| 2101114 | 180 | 062 | 088 | 350 | 075 | 057 | 04409 | 06448 |
| 2101115 | 226 | 048 | 032 | 326 | 069 | 086 | 01539 | 01660 |
| 2101116 | 202 | 068 | 126 | 416 | 057 | 053 | 05060 | 17416 |
| 2101117 | 230 | 060 | 130 | 340 | 078 | 089 | 04251 | 00508 |
| 2101118 | 254 | 046 | 116 | 436 | 060 | 042 | 01258 | 13257 |
| 2101119 | 190 | 066 | 086 | 370 | 079 | 060 | 04637 | 04406 |
| 2101120 | 214 | 060 | 032 | 326 | 083 | 096 | 02946 | 01520 |
| 2201101 | 472 | 072 | 094 | 658 | 149 | 123 | 06372 | 10324 |
| 2201102 | 382 | 056 | 110 | 660 | 164 | 120 | 04543 | 14596 |
| 2201103 | 464 | 056 | 130 | 570 | 113 | 147 | 04231 | 01998 |
| 2201104 | 340 | 062 | 114 | 620 | 150 | 118 | 03735 | 10065 |
| 2201105 | 276 | 074 | 098 | 550 | 154 | 112 | 05063 | 08795 |
| 2201106 | 430 | 068 | 094 | 626 | 144 | 109 | 05175 | 06606 |
| 2201107 | 422 | 064 | 106 | 688 | 139 | 102 | 05501 | 12141 |
| 2201108 | 358 | 066 | 092 | 638 | 164 | 127 | 06415 | 10130 |
| 2201109 | 360 | 062 | 108 | 638 | 151 | 106 | 05337 | 12745 |
| 2201110 | 320 | 078 | 098 | 522 | 150 | 113 | 08210 | 12457 |
| 2201111 | 484 | 038 | 086 | 628 | 151 | 135 | 04184 | 10569 |
| 2201112 | 368 | 052 | 086 | 614 | 131 | 103 | 05197 | 07429 |
| 2201113 | 406 | 050 | 082 | 574 | 137 | 102 | 05276 | 08565 |
| 2201114 | 512 | 090 | 092 | 722 | 144 | 115 | 04997 | 08690 |
| 2201115 | 502 | 050 | 102 | 684 | 140 | 110 | 04954 | 10567 |
| 2201116 | 364 | 062 | 116 | 562 | 129 | 116 | 04373 | 11717 |
| 2201117 | 256 | 072 | 096 | 516 | 155 | 120 | 04829 | 09861 |
| 2201118 | 304 | 076 | 104 | 504 | 122 | 103 | 05787 | 12974 |
| 2201119 | 272 | 052 | 098 | 522 | 136 | 111 | 03905 | 11774 |
| 2201120 | 344 | 054 | 108 | 572 | 119 | 105 | 03698 | 11950 |
| 2401101 | 346 | 036 | 136 | 620 | 260 | 211 | 01985 | 14862 |
| 2401102 | 274 | 050 | 080 | 514 | 227 | 201 | 02541 | 04627 |
| 2401103 | 190 | 064 | 148 | 524 | 258 | 229 | 02885 | 13191 |
| 2401104 | 274 | 068 | 132 | 628 | 233 | 228 | 06607 | 16448 |
| 2401105 | 368 | 052 | 138 | 652 | 237 | 219 | 03713 | 16478 |
| 2401106 | 290 | 096 | 102 | 614 | 287 | 235 | 11147 | 11293 |
| 2401107 | 302 | 080 | 130 | 616 | 248 | 233 | 06977 | 16988 |
| 2401108 | 194 | 080 | 124 | 506 | 267 | 235 | 05012 | 13862 |
| 2401109 | 242 | 068 | 126 | 556 | 243 | 235 | 03919 | 14129 |
| 2401110 | 252 | 078 | 164 | 542 | 255 | 227 | 04430 | 16694 |
| 2401111 | 242 | 084 | 164 | 542 | 255 | 227 | 04430 | 16694 |
| 2401112 | 284 | 066 | 118 | 620 | 281 | 227 | 05891 | 16221 |
| 2401113 | 242 | 076 | 102 | 532 | 239 | 219 | 07792 | 09656 |
| 2401114 | 254 | 076 | 134 | 744 | 235 | 240 | 07230 | 14906 |
| 2401115 | 194 | 096 | 120 | 520 | 259 | 222 | 06412 | 12278 |
| 2401116 | 270 | 042 | 134 | 582 | 245 | 207 | 02826 | 19397 |
| 2401117 | 280 | 092 | 096 | 596 | 290 | 228 | 13294 | 11538 |
| 2401118 | 250 | 090 | 106 | 554 | 252 | 225 | 07921 | 12475 |
| 2401119 | 244 | 088 | 114 | 534 | 247 | 228 | 04126 | 11019 |
| 2401120 | 258 | 084 | 112 | 536 | 259 | 227 | 08053 | 11258 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101201 | 202 | 054 | 030 | 312 | 071 | 077 | 02314 | 00717 |
| 2101202 | 168 | 030 | 040 | 258 | 052 | 065 | 01447 | 01593 |
| 2101203 | 148 | 042 | 052 | 262 | 056 | 075 | 01730 | 00684 |
| 2101204 | 138 | 032 | 048 | 238 | 053 | 065 | 00994 | 00710 |
| 2101205 | 144 | 050 | 272 | 484 | 066 | 064 | 02597 | 14992 |
| 2101206 | 170 | 050 | 034 | 274 | 075 | 083 | 02088 | 00679 |
| 2101207 | 118 | 030 | 058 | 226 | 077 | 091 | 00253 | 02935 |
| 2101208 | 172 | 086 | 030 | 308 | 078 | 079 | 04550 | 01650 |
| 2101209 | 140 | 050 | 034 | 244 | 078 | 083 | 01773 | 01298 |
| 2101210 | 148 | 070 | 030 | 270 | 077 | 081 | 03800 | 00823 |
| 2101211 | 080 | 050 | 040 | 198 | 070 | 081 | 00557 | 02077 |
| 2101212 | 122 | 030 | 060 | 232 | 061 | 080 | 00748 | 00732 |
| 2101213 | 086 | 038 | 036 | 180 | 067 | 081 | 00687 | 01732 |
| 2101214 | 086 | 054 | 030 | 190 | 068 | 081 | 01989 | 01160 |
| 2101215 | 118 | 030 | 058 | 226 | 077 | 091 | 00253 | 02935 |
| 2101216 | 172 | 086 | 030 | 308 | 078 | 079 | 04550 | 01650 |
| 2101217 | 140 | 050 | 034 | 244 | 078 | 083 | 01773 | 01298 |
| 2101218 | 148 | 070 | 030 | 270 | 077 | 081 | 03800 | 00823 |
| 2101219 | 080 | 050 | 040 | 198 | 070 | 081 | 00557 | 02077 |
| 2101220 | 122 | 030 | 060 | 232 | 061 | 080 | 00748 | 00732 |
| 2201201 | 106 | 054 | 034 | 214 | 107 | 138 | 02106 | 00770 |
| 2201202 | 160 | 038 | 090 | 318 | 138 | 121 | 01827 | 09216 |
| 2201203 | 166 | 034 | 132 | 352 | 133 | 125 | 00398 | 11864 |
| 2201204 | 184 | 036 | 092 | 348 | 128 | 109 | 00762 | 09368 |
| 2201205 | 162 | 042 | 096 | 324 | 141 | 133 | 01396 | 10704 |
| 2201206 | 158 | 068 | 066 | 456 | 151 | 129 | 02739 | 05657 |
| 2201207 | 152 | 062 | 078 | 416 | 151 | 117 | 02781 | 03345 |
| 2201208 | 114 | 060 | 084 | 766 | 143 | 127 | 03174 | 06407 |
| 2201209 | 144 | 066 | 074 | 394 | 159 | 129 | 02883 | 05537 |
| 2201210 | 152 | 048 | 032 | 242 | 103 | 140 | 01409 | 01035 |
| 2201211 | 120 | 068 | 036 | 244 | 094 | 123 | 00366 | 01054 |
| 2201212 | 122 | 060 | 094 | 296 | 146 | 138 | 00617 | 08155 |
| 2201213 | 156 | 070 | 072 | 318 | 161 | 153 | 03474 | 05820 |
| 2201214 | 130 | 044 | 094 | 288 | 165 | 156 | 01918 | 11781 |
| 2201215 | 164 | 076 | 068 | 506 | 174 | 118 | 04054 | 05265 |
| 2201216 | 154 | 052 | 080 | 306 | 164 | 159 | 01434 | 08739 |
| 2201217 | 146 | 040 | 034 | 240 | 103 | 138 | 01491 | 01189 |
| 2201218 | 196 | 062 | 070 | 434 | 129 | 118 | 02513 | 06617 |
| 2201219 | 236 | 038 | 074 | 374 | 141 | 136 | 00697 | 05576 |
| 2201220 | 144 | 066 | 074 | 394 | 159 | 129 | 02883 | 05537 |
| 2401201 | 110 | 070 | 134 | 502 | 278 | 262 | 03080 | 18149 |
| 2401202 | 122 | 066 | 178 | 386 | 285 | 278 | 02612 | 22915 |
| 2401203 | 120 | 034 | 184 | 362 | 279 | 271 | 00970 | 25337 |
| 2401204 | 220 | 086 | 030 | 356 | 214 | 254 | 06542 | 00445 |
| 2401205 | 166 | 046 | 058 | 290 | 193 | 245 | 02860 | 02168 |
| 2401206 | 146 | 030 | 168 | 456 | 266 | 257 | 00410 | 19991 |
| 2401207 | 178 | 052 | 056 | 306 | 194 | 241 | 03302 | 02554 |
| 2401208 | 144 | 072 | 052 | 288 | 200 | 241 | 03549 | 00923 |
| 2401209 | 170 | 078 | 040 | 304 | 205 | 255 | 04136 | 01036 |
| 2401210 | 148 | 064 | 154 | 396 | 274 | 266 | 01577 | 14281 |
| 2401211 | 120 | 084 | 266 | 498 | 253 | 251 | 04689 | 27354 |
| 2401212 | 164 | 076 | 030 | 294 | 176 | 221 | 04151 | 01716 |
| 2401213 | 158 | 079 | 048 | 304 | 223 | 268 | 05288 | 01273 |
| 2401214 | 196 | 048 | 134 | 482 | 270 | 249 | 02051 | 08235 |
| 2401215 | 160 | 038 | 096 | 586 | 301 | 261 | 02919 | 19788 |
| 2401216 | 158 | 078 | 030 | 286 | 163 | 216 | 06398 | 00152 |
| 2401217 | 116 | 030 | 262 | 430 | 238 | 229 | 01364 | 33125 |
| 2401218 | 140 | 034 | 188 | 382 | 287 | 275 | 00915 | 23367 |
| 2401219 | 158 | 058 | 096 | 398 | 240 | 245 | 05612 | 06458 |
| 2401220 | 142 | 068 | 146 | 458 | 254 | 245 | 04215 | 11548 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101301 | 124 | 030 | 066 | 400 | 061 | 058 | 00578 | 05704 |
| 2101302 | 182 | 064 | 034 | 484 | 068 | 072 | 04630 | 00412 |
| 2101303 | 122 | 064 | 064 | 436 | 091 | 075 | 03113 | 03203 |
| 2101304 | 238 | 050 | 030 | 338 | 060 | 067 | 02653 | 00733 |
| 2101305 | 134 | 030 | 098 | 282 | 069 | 061 | 00195 | 13141 |
| 2101306 | 130 | 036 | 080 | 434 | 075 | 069 | 01312 | 03803 |
| 2101307 | 136 | 052 | 328 | 536 | 063 | 063 | 02734 | 20329 |
| 2101308 | 090 | 036 | 070 | 216 | 056 | 070 | 00339 | 02132 |
| 2101309 | 178 | 032 | 070 | 260 | 062 | 074 | 01210 | 00832 |
| 2101310 | 186 | 030 | 038 | 374 | 073 | 068 | 00171 | 10289 |
| 2101311 | 332 | 030 | 036 | 418 | 053 | 057 | 01016 | 00865 |
| 2101312 | 176 | 060 | 032 | 470 | 071 | 070 | 03571 | 00221 |
| 2101313 | 130 | 030 | 158 | 338 | 056 | 054 | 00658 | 11029 |
| 2101314 | 100 | 054 | 072 | 330 | 081 | 070 | 01837 | 03201 |
| 2101315 | 134 | 046 | 060 | 388 | 082 | 068 | 01775 | 02403 |
| 2101316 | 142 | 040 | 078 | 398 | 077 | 067 | 00886 | 05349 |
| 2101317 | 164 | 084 | 070 | 348 | 085 | 077 | 07109 | 05456 |
| 2101318 | 192 | 044 | 100 | 356 | 087 | 081 | 01342 | 09525 |
| 2101319 | 160 | 060 | 112 | 462 | 114 | 073 | 03238 | 04252 |
| 2101320 | 178 | 030 | 040 | 268 | 052 | 063 | 00288 | 02272 |
| 2201301 | 184 | 038 | 594 | 978 | 132 | 134 | 00493 | 33962 |
| 2201302 | 168 | 078 | 042 | 308 | 117 | 132 | 07643 | 00638 |
| 2201303 | 096 | 066 | 032 | 220 | 082 | 106 | 02491 | 00761 |
| 2201304 | 156 | 030 | 042 | 248 | 087 | 113 | 00093 | 03619 |
| 2201305 | 114 | 072 | 030 | 238 | 102 | 129 | 05757 | 00104 |
| 2201306 | 102 | 040 | 040 | 202 | 084 | 111 | 02534 | 01546 |
| 2201307 | 110 | 050 | 030 | 210 | 088 | 113 | 03557 | 01041 |
| 2201308 | 202 | 064 | 034 | 320 | 091 | 113 | 03182 | 01282 |
| 2201309 | 110 | 030 | 316 | 646 | 140 | 139 | 01354 | 35934 |
| 2201310 | 130 | 080 | 030 | 262 | 084 | 110 | 03766 | 00449 |
| 2201311 | 130 | 064 | 280 | 494 | 137 | 137 | 05631 | 19382 |
| 2201312 | 180 | 040 | 750 | 998 | 125 | 126 | 01306 | 28339 |
| 2201313 | 142 | 048 | 032 | 242 | 081 | 109 | 02097 | 00886 |
| 2201314 | 142 | 052 | 036 | 250 | 100 | 121 | 04057 | 01370 |
| 2201315 | 158 | 038 | 188 | 514 | 132 | 130 | 01347 | 13541 |
| 2201316 | 100 | 042 | 198 | 470 | 132 | 128 | 02349 | 13024 |
| 2201317 | 240 | 058 | 076 | 394 | 129 | 130 | 03543 | 05422 |
| 2201318 | 106 | 062 | 052 | 240 | 115 | 128 | 03633 | 02734 |
| 2201319 | 092 | 062 | 102 | 276 | 141 | 138 | 03167 | 07644 |
| 2201320 | 156 | 032 | 036 | 244 | 091 | 114 | 00927 | 01801 |
| 2401301 | 108 | 048 | 076 | 252 | 212 | 248 | 01416 | 05080 |
| 2401302 | 150 | 060 | 076 | 306 | 221 | 241 | 05253 | 03684 |
| 2401303 | 176 | 048 | 066 | 310 | 172 | 212 | 02913 | 02003 |
| 2401304 | 190 | 096 | 032 | 338 | 167 | 203 | 04620 | 01360 |
| 2401305 | 096 | 054 | 034 | 204 | 151 | 196 | 03177 | 01497 |
| 2401306 | 260 | 076 | 138 | 506 | 263 | 256 | 04497 | 11867 |
| 2401307 | 298 | 034 | 162 | 514 | 242 | 246 | 00228 | 11678 |
| 2401308 | 368 | 094 | 034 | 516 | 189 | 231 | 06068 | 01776 |
| 2401309 | 222 | 096 | 108 | 504 | 257 | 252 | 04124 | 11808 |
| 2401310 | 440 | 066 | 036 | 562 | 187 | 226 | 03255 | 01404 |
| 2401311 | 308 | 098 | 084 | 510 | 260 | 254 | 05074 | 13783 |
| 2401312 | 372 | 072 | 040 | 504 | 198 | 232 | 04449 | 02703 |
| 2401313 | 274 | 118 | 172 | 610 | 251 | 244 | 08666 | 14446 |
| 2401314 | 102 | 094 | 114 | 334 | 275 | 272 | 04036 | 09802 |
| 2401315 | 286 | 108 | 106 | 678 | 264 | 259 | 06613 | 08989 |
| 2401316 | 224 | 072 | 206 | 522 | 238 | 244 | 02854 | 25057 |
| 2401317 | 292 | 034 | 040 | 382 | 243 | 247 | 01647 | 00587 |
| 2401318 | 262 | 074 | 116 | 998 | 246 | 250 | 06032 | 16916 |
| 2401319 | 206 | 094 | 030 | 350 | 207 | 248 | 06516 | 00762 |
| 2401320 | 334 | 078 | 032 | 464 | 199 | 232 | 05369 | 01575 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101401 | 074 | 030 | 030 | 154 | 032 | 057 | 00853 | 02882 |
| 2101402 | 152 | 058 | 080 | 456 | 100 | 071 | 01728 | 09114 |
| 2101403 | 174 | 072 | 068 | 362 | 095 | 072 | 04687 | 07522 |
| 2101404 | 176 | 050 | 064 | 464 | 093 | 061 | 01433 | 05823 |
| 2101405 | 190 | 070 | 064 | 464 | 083 | 063 | 05041 | 04576 |
| 2101406 | 142 | 050 | 060 | 294 | 081 | 073 | 02343 | 04266 |
| 2101407 | 120 | 030 | 086 | 256 | 092 | 082 | 02227 | 09524 |
| 2101408 | 134 | 044 | 030 | 228 | 052 | 067 | 00843 | 00568 |
| 2101409 | 180 | 056 | 076 | 332 | 088 | 082 | 03184 | 06693 |
| 2101410 | 138 | 054 | 030 | 242 | 062 | 081 | 01888 | 00956 |
| 2101411 | 156 | 072 | 076 | 538 | 084 | 076 | 03591 | 03231 |
| 2101412 | 198 | 068 | 082 | 374 | 080 | 077 | 02525 | 03647 |
| 2101413 | 164 | 074 | 094 | 354 | 093 | 089 | 02362 | 04570 |
| 2101414 | 196 | 072 | 078 | 382 | 088 | 084 | 02758 | 03821 |
| 2101415 | 138 | 072 | 054 | 470 | 094 | 075 | 02433 | 04085 |
| 2101416 | 152 | 070 | 066 | 308 | 087 | 080 | 03343 | 06262 |
| 2101417 | 136 | 076 | 070 | 450 | 089 | 056 | 03872 | 03873 |
| 2101418 | 236 | 078 | 096 | 876 | 098 | 070 | 03860 | 04561 |
| 2101419 | 174 | 058 | 278 | 694 | 062 | 062 | 02255 | 09362 |
| 2101420 | 168 | 042 | 126 | 480 | 072 | 065 | 02110 | 08547 |
| 2201401 | 160 | 072 | 033 | 290 | 097 | 119 | 02721 | 00124 |
| 2201402 | 182 | 124 | 062 | 368 | 137 | 137 | 07716 | 02953 |
| 2201403 | 174 | 038 | 086 | 298 | 126 | 126 | 01733 | 04969 |
| 2201404 | 188 | 048 | 076 | 342 | 125 | 123 | 01656 | 05448 |
| 2201405 | 142 | 066 | 192 | 420 | 127 | 123 | 01421 | 09362 |
| 2201406 | 186 | 072 | 072 | 350 | 153 | 155 | 04198 | 06596 |
| 2201407 | 144 | 080 | 138 | 388 | 142 | 142 | 02487 | 05981 |
| 2201408 | 182 | 056 | 098 | 456 | 138 | 130 | 02335 | 04463 |
| 2201409 | 172 | 062 | 098 | 360 | 139 | 140 | 03551 | 04763 |
| 2201410 | 090 | 046 | 030 | 186 | 111 | 142 | 01424 | 00258 |
| 2201411 | 124 | 040 | 238 | 628 | 118 | 119 | 00370 | 16985 |
| 2201412 | 232 | 088 | 062 | 570 | 136 | 121 | 04279 | 04362 |
| 2201413 | 186 | 080 | 058 | 434 | 123 | 118 | 05842 | 04069 |
| 2201414 | 142 | 066 | 192 | 420 | 127 | 123 | 01421 | 09362 |
| 2201415 | 160 | 072 | 033 | 290 | 097 | 119 | 02721 | 00124 |
| 2201416 | 188 | 048 | 076 | 342 | 125 | 123 | 01656 | 05448 |
| 2201417 | 142 | 066 | 192 | 420 | 127 | 123 | 01421 | 09362 |
| 2201418 | 182 | 056 | 098 | 456 | 138 | 130 | 02335 | 04463 |
| 2201419 | 172 | 062 | 098 | 360 | 139 | 140 | 03551 | 04763 |
| 2201420 | 090 | 046 | 030 | 186 | 111 | 142 | 01424 | 00258 |
| 2401401 | 156 | 092 | 140 | 412 | 254 | 254 | 07538 | 07573 |
| 2401402 | 170 | 086 | 266 | 556 | 258 | 255 | 04734 | 14713 |
| 2401403 | 248 | 076 | 130 | 374 | 195 | 211 | 06973 | 00473 |
| 2401404 | 184 | 056 | 484 | 744 | 236 | 237 | 02150 | 23862 |
| 2401405 | 522 | 060 | 054 | 656 | 222 | 255 | 06165 | 01548 |
| 2401406 | 208 | 058 | 074 | 360 | 198 | 222 | 03553 | 01805 |
| 2401407 | 208 | 064 | 172 | 594 | 253 | 248 | 05617 | 05561 |
| 2401408 | 270 | 054 | 036 | 380 | 151 | 195 | 03643 | 01869 |
| 2401409 | 246 | 066 | 030 | 362 | 192 | 225 | 05735 | 01220 |
| 2401410 | 206 | 082 | 032 | 344 | 181 | 213 | 06917 | 01330 |
| 2401411 | 256 | 074 | 292 | 642 | 237 | 234 | 04932 | 13680 |
| 2401412 | 200 | 040 | 130 | 390 | 259 | 267 | 02699 | 06667 |
| 2401413 | 284 | 046 | 212 | 562 | 256 | 251 | 04266 | 12736 |
| 2401414 | 234 | 054 | 122 | 430 | 242 | 249 | 03428 | 10641 |
| 2401415 | 240 | 066 | 124 | 450 | 241 | 245 | 02663 | 13069 |
| 2401416 | 158 | 090 | 090 | 358 | 239 | 243 | 07573 | 08196 |
| 2401417 | 190 | 062 | 452 | 740 | 244 | 244 | 01647 | 34309 |
| 2401418 | 192 | 104 | 044 | 566 | 232 | 259 | 11245 | 00884 |
| 2401419 | 204 | 084 | 156 | 708 | 254 | 254 | 03582 | 07854 |
| 2401420 | 216 | 070 | 030 | 336 | 165 | 216 | 06076 | 01139 |

2101501 174 042 070 306 082 077 01903 07071
 2101502 142 040 034 236 054 066 00690 01797
 2101503 166 030 430 998 068 069 00931 18194
 2101504 074 044 076 234 085 070 00660 08410
 2101505 182 034 036 272 069 077 01310 01121
 2101506 172 034 030 256 053 070 00682 00485
 2101507 136 030 060 226 080 080 01782 02521
 2101508 152 036 036 244 067 085 00093 00982
 2101509 154 046 074 304 078 074 00956 05445
 2101510 208 030 030 288 061 081 00436 01881
 2101511 174 042 070 306 082 077 01903 07071
 2101512 166 030 430 998 068 069 00931 18194
 2101512 142 040 034 236 054 066 00690 01797
 2101514 074 044 076 234 085 070 00660 08410
 2101515 182 034 036 272 069 077 01310 01121
 2101516 172 034 030 256 053 070 00682 00485
 2101517 136 030 060 226 080 080 01782 02521
 2101518 152 036 036 244 067 085 00093 00982
 2101519 154 046 074 304 078 074 00956 05445
 2101520 208 030 030 288 061 081 00436 01881
 2201501 148 048 034 252 099 131 02279 01909
 2201502 164 140 036 360 140 147 06921 00671
 2201503 158 064 030 272 094 122 02392 00384
 2201504 158 040 066 284 098 120 00527 02748
 2201505 166 048 124 358 133 133 03470 09597
 2201506 198 072 062 352 100 117 01961 01835
 2201507 212 030 034 296 102 138 01605 02065
 2201508 188 052 030 290 103 127 03769 00473
 2201509 136 044 046 246 110 140 01211 02025
 2201510 202 064 032 318 093 120 01261 01653
 2201511 188 062 044 314 103 128 02746 01137
 2201512 148 030 034 232 107 145 01656 01844
 2201513 152 044 030 246 131 177 03852 01047
 2201514 190 050 034 294 090 114 02704 00652
 2201515 176 032 034 262 089 118 01885 00599
 2201516 158 046 036 260 085 111 02013 00374
 2201517 212 038 036 306 085 112 01718 01248
 2201518 224 054 034 332 101 126 02104 01492
 2201519 072 032 402 999 147 147 01604 32301
 2201520 136 060 032 248 100 132 02999 02043
 2401501 100 062 156 354 253 253 05341 16703
 2401502 090 060 152 520 231 236 04461 14140
 2401503 124 086 136 452 248 243 06585 12290
 2401504 130 056 198 404 246 245 02533 17308
 2401505 108 056 158 352 247 248 01983 12625
 2401506 186 056 148 512 245 247 01376 18567
 2401507 190 050 120 380 232 230 03953 13731
 2401508 174 074 108 376 249 252 06402 11798
 2401509 146 060 142 374 236 237 03177 17342
 2401510 136 058 100 318 246 244 03835 15132
 2401511 274 058 108 576 242 241 01832 12373
 2401512 226 068 098 518 243 248 06580 06851
 2401513 234 060 104 422 225 226 04174 08909
 2401514 136 052 128 342 248 249 04516 13902
 2401515 076 044 148 288 244 243 04840 17065
 2401516 186 046 138 492 250 252 02549 16416
 2401517 164 052 110 346 243 246 04546 07365
 2401518 146 064 100 334 261 259 06785 07564
 2401519 094 058 120 298 250 250 04501 09742
 2401520 080 054 106 260 224 226 05160 11413

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101601 | 148 | 068 | 172 | 478 | 081 | 072 | 06892 | 22345 |
| 2101602 | 102 | 057 | 104 | 282 | 089 | 077 | 05306 | 12453 |
| 2101603 | 208 | 056 | 070 | 334 | 097 | 068 | 06590 | 09579 |
| 2101604 | 070 | 046 | 054 | 244 | 090 | 059 | 03301 | 06890 |
| 2101605 | 088 | 078 | 050 | 392 | 112 | 074 | 07361 | 03865 |
| 2101606 | 070 | 050 | 032 | 172 | 040 | 084 | 04318 | 02355 |
| 2101607 | 088 | 044 | 074 | 352 | 118 | 065 | 03476 | 13659 |
| 2101608 | 098 | 068 | 052 | 258 | 078 | 058 | 06460 | 09231 |
| 2101609 | 164 | 034 | 042 | 260 | 060 | 079 | 04541 | 01363 |
| 2101610 | 086 | 080 | 044 | 416 | 099 | 063 | 08299 | 08921 |
| 2101611 | 334 | 034 | 084 | 638 | 142 | 072 | 02172 | 12773 |
| 2101612 | 070 | 032 | 036 | 158 | 068 | 097 | 01460 | 01086 |
| 2101613 | 136 | 050 | 068 | 274 | 080 | 068 | 04231 | 10315 |
| 2101614 | 134 | 032 | 050 | 604 | 084 | 073 | 03048 | 07115 |
| 2101615 | 124 | 078 | 052 | 310 | 089 | 068 | 05330 | 12499 |
| 2101616 | 142 | 062 | 034 | 260 | 045 | 088 | 06156 | 00272 |
| 2101617 | 334 | 034 | 084 | 638 | 142 | 072 | 02172 | 12773 |
| 2101618 | 070 | 032 | 036 | 158 | 068 | 097 | 01460 | 01086 |
| 2101619 | 136 | 050 | 086 | 274 | 080 | 068 | 04231 | 10315 |
| 2101620 | 134 | 032 | 050 | 604 | 084 | 073 | 03048 | 07115 |
| 2201601 | 120 | 078 | 144 | 362 | 124 | 118 | 07530 | 22688 |
| 2201602 | 070 | 072 | 030 | 378 | 128 | 135 | 09545 | 00527 |
| 2201603 | 098 | 076 | 192 | 386 | 134 | 133 | 06198 | 13672 |
| 2201604 | 070 | 066 | 122 | 288 | 140 | 134 | 06876 | 10133 |
| 2201605 | 236 | 068 | 182 | 506 | 129 | 127 | 07641 | 14363 |
| 2201606 | 136 | 064 | 068 | 294 | 141 | 138 | 08094 | 07357 |
| 2201607 | 146 | 066 | 074 | 306 | 140 | 133 | 06053 | 08745 |
| 2201608 | 176 | 052 | 322 | 578 | 127 | 125 | 03462 | 56530 |
| 2201609 | 134 | 068 | 058 | 438 | 131 | 129 | 07505 | 04817 |
| 2201610 | 120 | 062 | 370 | 572 | 121 | 120 | 10521 | 30961 |
| 2201611 | 122 | 068 | 066 | 284 | 122 | 122 | 04548 | 09805 |
| 2201612 | 110 | 066 | 102 | 308 | 144 | 129 | 06092 | 14434 |
| 2201613 | 192 | 038 | 108 | 366 | 126 | 118 | 03109 | 10012 |
| 2201614 | 136 | 050 | 106 | 346 | 120 | 126 | 03354 | 05867 |
| 2201615 | 108 | 050 | 140 | 318 | 148 | 134 | 06427 | 26328 |
| 2201616 | 130 | 030 | 092 | 272 | 127 | 116 | 01385 | 10008 |
| 2201617 | 086 | 054 | 134 | 294 | 150 | 139 | 07780 | 25508 |
| 2201618 | 124 | 096 | 060 | 300 | 125 | 132 | 07736 | 06556 |
| 2201619 | 160 | 064 | 118 | 412 | 138 | 119 | 06904 | 12989 |
| 2201620 | 138 | 052 | 076 | 348 | 158 | 128 | 06959 | 13686 |
| 2401601 | 092 | 040 | 068 | 220 | 207 | 267 | 02078 | 13939 |
| 2401602 | 070 | 048 | 110 | 500 | 268 | 243 | 02230 | 15898 |
| 2401603 | 074 | 064 | 078 | 496 | 275 | 259 | 05474 | 14539 |
| 2401604 | 130 | 036 | 090 | 728 | 288 | 249 | 04607 | 14263 |
| 2401605 | 148 | 032 | 056 | 260 | 212 | 274 | 02251 | 07006 |
| 2401606 | 132 | 052 | 056 | 522 | 285 | 252 | 05964 | 08559 |
| 2401607 | 108 | 044 | 056 | 570 | 160 | 249 | 01990 | 07609 |
| 2401608 | 110 | 042 | 068 | 560 | 245 | 241 | 03745 | 12147 |
| 2401609 | 160 | 046 | 082 | 644 | 267 | 250 | 04800 | 14722 |
| 2401610 | 154 | 088 | 054 | 366 | 239 | 260 | 12154 | 11579 |
| 2401611 | 154 | 094 | 030 | 298 | 186 | 236 | 10064 | 04041 |
| 2401612 | 114 | 104 | 058 | 296 | 260 | 264 | 09849 | 08715 |
| 2401613 | 092 | 040 | 068 | 220 | 207 | 267 | 02078 | 13939 |
| 2401614 | 070 | 048 | 110 | 500 | 268 | 243 | 02230 | 15989 |
| 2401615 | 074 | 064 | 078 | 496 | 275 | 259 | 05474 | 14539 |
| 2401616 | 130 | 036 | 090 | 728 | 288 | 249 | 04607 | 14263 |
| 2401617 | 110 | 042 | 068 | 560 | 245 | 241 | 03754 | 12147 |
| 2401618 | 160 | 046 | 082 | 644 | 267 | 250 | 04800 | 14722 |
| 2401619 | 152 | 082 | 055 | 388 | 249 | 238 | 08652 | 11256 |
| 2401620 | 148 | 056 | 098 | 352 | 224 | 242 | 02356 | 04685 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101701 | 108 | 072 | 050 | 272 | 088 | 064 | 05068 | 04199 |
| 2101702 | 082 | 108 | 088 | 310 | 069 | 060 | 04488 | 05755 |
| 2101703 | 088 | 054 | 032 | 194 | 068 | 075 | 02166 | 01747 |
| 2101704 | 126 | 030 | 176 | 352 | 051 | 052 | 00096 | 10964 |
| 2101705 | 104 | 042 | 030 | 196 | 062 | 068 | 01994 | 01304 |
| 2101706 | 123 | 050 | 050 | 246 | 081 | 077 | 02423 | 03562 |
| 2101707 | 102 | 116 | 030 | 268 | 064 | 075 | 05437 | 01528 |
| 2101708 | 158 | 068 | 036 | 282 | 068 | 075 | 02155 | 02058 |
| 2101709 | 138 | 044 | 034 | 236 | 042 | 058 | 00859 | 00998 |
| 2101710 | 148 | 030 | 038 | 236 | 049 | 057 | 00797 | 01189 |
| 2101711 | 168 | 056 | 090 | 336 | 062 | 060 | 00973 | 03101 |
| 2101712 | 080 | 080 | 038 | 218 | 068 | 072 | 02699 | 00806 |
| 2101713 | 084 | 044 | 732 | 884 | 049 | 049 | 00852 | 16982 |
| 2101714 | 134 | 054 | 216 | 518 | 051 | 052 | 03127 | 21320 |
| 2101715 | 102 | 038 | 050 | 210 | 069 | 060 | 02072 | 05056 |
| 2101716 | 088 | 054 | 032 | 194 | 068 | 075 | 02166 | 01747 |
| 2101717 | 126 | 030 | 176 | 352 | 051 | 052 | 01296 | 10964 |
| 2101718 | 104 | 042 | 030 | 196 | 062 | 068 | 01994 | 01304 |
| 2101719 | 126 | 050 | 050 | 246 | 081 | 077 | 02423 | 03562 |
| 2101720 | 102 | 116 | 030 | 268 | 064 | 075 | 05437 | 01528 |
| 2201701 | 184 | 064 | 090 | 470 | 129 | 120 | 02309 | 05620 |
| 2201702 | 296 | 030 | 094 | 448 | 123 | 120 | 01201 | 06871 |
| 2201703 | 218 | 078 | 090 | 396 | 138 | 134 | 03712 | 04790 |
| 2201704 | 200 | 070 | 074 | 440 | 138 | 126 | 05704 | 04553 |
| 2201705 | 164 | 034 | 108 | 326 | 109 | 110 | 00556 | 05101 |
| 2201706 | 208 | 064 | 092 | 384 | 141 | 137 | 03211 | 07461 |
| 2201707 | 196 | 050 | 144 | 438 | 146 | 136 | 00671 | 10784 |
| 2201708 | 170 | 074 | 082 | 346 | 180 | 131 | 03172 | 07197 |
| 2201709 | 136 | 052 | 132 | 380 | 135 | 112 | 03998 | 11096 |
| 2201710 | 098 | 050 | 104 | 272 | 142 | 136 | 02749 | 07592 |
| 2201711 | 248 | 032 | 108 | 418 | 120 | 113 | 01015 | 08618 |
| 2201712 | 142 | 058 | 080 | 436 | 155 | 125 | 04808 | 08799 |
| 2201713 | 214 | 052 | 090 | 376 | 144 | 134 | 04016 | 11254 |
| 2201714 | 146 | 060 | 078 | 322 | 149 | 138 | 04453 | 09247 |
| 2201715 | 188 | 060 | 072 | 340 | 138 | 135 | 03613 | 08420 |
| 2201716 | 192 | 048 | 088 | 392 | 125 | 112 | 03100 | 09466 |
| 2201717 | 118 | 074 | 056 | 354 | 144 | 117 | 06298 | 06884 |
| 2201718 | 122 | 030 | 132 | 308 | 110 | 112 | 00149 | 10341 |
| 2201719 | 076 | 128 | 084 | 308 | 138 | 134 | 04540 | 07316 |
| 2201720 | 104 | 072 | 062 | 268 | 151 | 142 | 04405 | 08743 |
| 2401701 | 132 | 054 | 366 | 572 | 249 | 252 | 03708 | 25478 |
| 2401702 | 070 | 092 | 230 | 412 | 258 | 254 | 06533 | 18856 |
| 2401703 | 128 | 054 | 118 | 416 | 244 | 246 | 03757 | 10926 |
| 2401704 | 160 | 050 | 658 | 888 | 237 | 240 | 02372 | 41423 |
| 2401705 | 164 | 062 | 164 | 424 | 263 | 256 | 06134 | 15545 |
| 2401706 | 168 | 070 | 086 | 344 | 253 | 249 | 07049 | 09203 |
| 2401707 | 114 | 090 | 360 | 920 | 243 | 256 | 06100 | 22513 |
| 2401708 | 142 | 046 | 154 | 400 | 255 | 246 | 02187 | 14087 |
| 2401709 | 136 | 054 | 096 | 306 | 254 | 253 | 05779 | 07536 |
| 2401710 | 086 | 050 | 146 | 430 | 263 | 253 | 02852 | 12303 |
| 2401711 | 166 | 056 | 308 | 550 | 246 | 243 | 04519 | 19723 |
| 2401712 | 122 | 064 | 112 | 324 | 259 | 257 | 04315 | 09673 |
| 2401713 | 138 | 046 | 274 | 480 | 240 | 238 | 04230 | 18424 |
| 2401714 | 182 | 048 | 220 | 470 | 242 | 234 | 01293 | 20230 |
| 2401715 | 132 | 060 | 080 | 532 | 233 | 237 | 02873 | 08850 |
| 2401716 | 190 | 054 | 048 | 312 | 207 | 259 | 06762 | 01109 |
| 2401717 | 142 | 044 | 134 | 340 | 266 | 264 | 02028 | 16900 |
| 2401718 | 172 | 054 | 138 | 388 | 266 | 266 | 04082 | 11658 |
| 2401719 | 210 | 074 | 100 | 408 | 250 | 247 | 03255 | 13844 |
| 2401720 | 280 | 062 | 122 | 484 | 261 | 260 | 04416 | 15216 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101801 | 082 | 056 | 084 | 246 | 085 | 080 | 04831 | 06659 |
| 2101802 | 084 | 030 | 114 | 322 | 070 | 065 | 00878 | 05736 |
| 2101803 | 072 | 054 | 044 | 190 | 170 | 089 | 04578 | 03884 |
| 2101804 | 110 | 104 | 048 | 308 | 066 | 060 | 09202 | 02555 |
| 2101805 | 070 | 098 | 184 | 544 | 062 | 063 | 05787 | 15750 |
| 2101806 | 070 | 030 | 170 | 298 | 069 | 062 | 00326 | 06677 |
| 2101807 | 118 | 072 | 060 | 270 | 062 | 057 | 02876 | 06402 |
| 2101808 | 072 | 054 | 052 | 430 | 062 | 077 | 01915 | 03902 |
| 2101809 | 126 | 056 | 090 | 292 | 073 | 069 | 01648 | 09096 |
| 2101810 | 096 | 056 | 030 | 202 | 073 | 080 | 02857 | 02076 |
| 2101811 | 070 | 048 | 056 | 372 | 069 | 061 | 02184 | 04386 |
| 2101812 | 098 | 030 | 066 | 214 | 060 | 061 | 01018 | 05050 |
| 2101813 | 104 | 042 | 074 | 516 | 086 | 070 | 02724 | 06798 |
| 2101814 | 080 | 048 | 088 | 272 | 085 | 071 | 03190 | 04890 |
| 2101815 | 078 | 062 | 080 | 328 | 080 | 068 | 02293 | 07626 |
| 2101816 | 090 | 030 | 080 | 220 | 074 | 073 | 00175 | 09710 |
| 2101817 | 078 | 080 | 130 | 308 | 068 | 062 | 04375 | 10122 |
| 2101818 | 074 | 094 | 054 | 272 | 095 | 071 | 07737 | 06335 |
| 2101819 | 082 | 030 | 030 | 162 | 049 | 041 | 01044 | 01869 |
| 2101820 | 070 | 034 | 088 | 212 | 070 | 067 | 01134 | 11404 |
| 2201801 | 072 | 048 | 054 | 194 | 113 | 125 | 01782 | 03201 |
| 2201802 | 104 | 046 | 080 | 250 | 121 | 120 | 00749 | 08107 |
| 2201803 | 076 | 050 | 030 | 176 | 080 | 104 | 02205 | 01460 |
| 2201804 | 098 | 056 | 032 | 206 | 086 | 110 | 02456 | 01652 |
| 2201805 | 092 | 082 | 050 | 252 | 106 | 118 | 03760 | 02061 |
| 2201806 | 128 | 074 | 048 | 270 | 090 | 109 | 02036 | 00796 |
| 2201807 | 086 | 034 | 284 | 424 | 114 | 112 | 00960 | 16794 |
| 2201808 | 076 | 060 | 038 | 194 | 095 | 119 | 01475 | 02027 |
| 2201809 | 102 | 062 | 030 | 214 | 092 | 115 | 04253 | 01296 |
| 2201810 | 150 | 030 | 054 | 254 | 102 | 107 | 01069 | 02844 |
| 2201811 | 074 | 046 | 046 | 186 | 084 | 105 | 00899 | 02361 |
| 2201812 | 086 | 058 | 030 | 194 | 086 | 107 | 02689 | 00784 |
| 2201813 | 096 | 040 | 170 | 326 | 118 | 116 | 01168 | 12530 |
| 2201814 | 114 | 052 | 030 | 216 | 091 | 116 | 02920 | 01537 |
| 2201815 | 088 | 030 | 050 | 188 | 092 | 123 | 00550 | 03895 |
| 2201816 | 084 | 060 | 032 | 196 | 099 | 124 | 02660 | 02688 |
| 2201817 | 100 | 040 | 030 | 190 | 077 | 102 | 02093 | 01069 |
| 2201818 | 110 | 036 | 104 | 438 | 142 | 132 | 01476 | 07176 |
| 2201819 | 086 | 110 | 042 | 258 | 103 | 126 | 03945 | 01566 |
| 2201820 | 094 | 056 | 032 | 202 | 099 | 121 | 03821 | 00465 |
| 2401801 | 090 | 060 | 046 | 218 | 187 | 237 | 07061 | 03631 |
| 2401802 | 116 | 084 | 042 | 578 | 272 | 251 | 10532 | 08778 |
| 2401803 | 096 | 084 | 054 | 254 | 241 | 249 | 08833 | 10802 |
| 2401804 | 096 | 078 | 040 | 234 | 209 | 255 | 09893 | 03211 |
| 2401805 | 156 | 058 | 042 | 280 | 205 | 250 | 07003 | 02511 |
| 2401806 | 116 | 068 | 062 | 584 | 269 | 264 | 10436 | 15631 |
| 2401807 | 096 | 048 | 070 | 602 | 273 | 252 | 06681 | 12823 |
| 2401808 | 142 | 064 | 076 | 550 | 251 | 248 | 06145 | 09477 |
| 2401809 | 136 | 068 | 064 | 290 | 249 | 253 | 10072 | 07884 |
| 2401810 | 124 | 060 | 048 | 252 | 235 | 256 | 09441 | 06774 |
| 2401811 | 150 | 062 | 066 | 502 | 274 | 249 | 10194 | 08043 |
| 2401812 | 162 | 064 | 056 | 606 | 267 | 249 | 09699 | 07284 |
| 2401813 | 222 | 076 | 088 | 418 | 245 | 247 | 06542 | 11362 |
| 2401814 | 150 | 068 | 032 | 270 | 203 | 249 | 10689 | 01564 |
| 2401815 | 124 | 070 | 034 | 252 | 192 | 234 | 07513 | 04135 |
| 2401816 | 202 | 084 | 108 | 430 | 288 | 272 | 07851 | 11937 |
| 2401817 | 170 | 062 | 140 | 416 | 244 | 236 | 05577 | 14373 |
| 2401818 | 170 | 056 | 068 | 314 | 252 | 254 | 09450 | 12022 |
| 2401819 | 152 | 068 | 084 | 346 | 258 | 258 | 10043 | 10675 |
| 2401820 | 170 | 052 | 224 | 466 | 251 | 253 | 06386 | 20821 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2101901 | 206 | 058 | 098 | 382 | 075 | 049 | 04857 | 13473 |
| 2101902 | 248 | 058 | 100 | 428 | 079 | 056 | 04145 | 10299 |
| 2101903 | 200 | 070 | 080 | 448 | 085 | 058 | 04284 | 09211 |
| 2101904 | 182 | 062 | 074 | 452 | 093 | 055 | 04473 | 06200 |
| 2101905 | 160 | 056 | 100 | 340 | 069 | 044 | 03507 | 08764 |
| 2101906 | 208 | 070 | 116 | 414 | 046 | 039 | 04448 | 23013 |
| 2101907 | 172 | 080 | 078 | 374 | 091 | 048 | 04911 | 07871 |
| 2101908 | 128 | 060 | 098 | 360 | 072 | 048 | 04084 | 08940 |
| 2101909 | 116 | 076 | 100 | 312 | 077 | 055 | 03921 | 12099 |
| 2101910 | 182 | 062 | 096 | 426 | 086 | 044 | 04538 | 10125 |
| 2101911 | 260 | 056 | 094 | 486 | 077 | 041 | 04806 | 10797 |
| 2101912 | 216 | 060 | 096 | 392 | 073 | 049 | 04267 | 10050 |
| 2101913 | 184 | 064 | 076 | 408 | 072 | 048 | 03608 | 07299 |
| 2101914 | 188 | 064 | 094 | 376 | 077 | 052 | 05135 | 07174 |
| 2101915 | 208 | 058 | 104 | 390 | 080 | 055 | 03870 | 11569 |
| 2101916 | 128 | 052 | 080 | 342 | 067 | 044 | 03136 | 08307 |
| 2101917 | 216 | 048 | 078 | 366 | 078 | 049 | 03083 | 09810 |
| 2101918 | 270 | 056 | 096 | 492 | 081 | 054 | 03802 | 10225 |
| 2101919 | 174 | 076 | 084 | 352 | 084 | 052 | 03252 | 09251 |
| 2101920 | 300 | 064 | 090 | 536 | 076 | 051 | 05419 | 08300 |
| 2201901 | 264 | 102 | 088 | 478 | 144 | 127 | 06657 | 07972 |
| 2201902 | 232 | 058 | 380 | 996 | 113 | 115 | 04658 | 45972 |
| 2201903 | 218 | 068 | 094 | 402 | 120 | 102 | 04551 | 08951 |
| 2201904 | 234 | 092 | 062 | 414 | 138 | 131 | 05245 | 03794 |
| 2201905 | 262 | 086 | 094 | 472 | 146 | 117 | 03939 | 08664 |
| 2201906 | 228 | 062 | 112 | 424 | 138 | 122 | 03587 | 11459 |
| 2201907 | 286 | 076 | 094 | 480 | 130 | 111 | 07040 | 07475 |
| 2201908 | 218 | 084 | 098 | 420 | 133 | 124 | 06819 | 08642 |
| 2201909 | 232 | 082 | 100 | 440 | 126 | 109 | 03718 | 08628 |
| 2201910 | 200 | 066 | 122 | 448 | 127 | 108 | 03868 | 13155 |
| 2201911 | 258 | 056 | 122 | 456 | 127 | 114 | 02286 | 15195 |
| 2201912 | 194 | 080 | 098 | 398 | 138 | 120 | 02975 | 12524 |
| 2201913 | 210 | 058 | 128 | 420 | 122 | 105 | 01866 | 15421 |
| 2201914 | 192 | 088 | 110 | 402 | 139 | 119 | 03217 | 14035 |
| 2201915 | 230 | 080 | 094 | 554 | 149 | 121 | 08103 | 08188 |
| 2201916 | 202 | 058 | 110 | 392 | 134 | 117 | 03749 | 10680 |
| 2201917 | 374 | 068 | 108 | 576 | 132 | 110 | 03251 | 12075 |
| 2201918 | 166 | 084 | 082 | 434 | 122 | 106 | 05447 | 07410 |
| 2201919 | 184 | 060 | 114 | 382 | 120 | 111 | 04992 | 14392 |
| 2201920 | 232 | 078 | 096 | 428 | 142 | 125 | 05570 | 09848 |
| 2401901 | 334 | 104 | 120 | 584 | 244 | 231 | 04969 | 14087 |
| 2401902 | 404 | 076 | 114 | 678 | 251 | 214 | 06877 | 15306 |
| 2401903 | 428 | 052 | 086 | 684 | 236 | 201 | 07799 | 04258 |
| 2401904 | 362 | 056 | 136 | 628 | 289 | 249 | 08346 | 15514 |
| 2401905 | 296 | 066 | 102 | 584 | 252 | 210 | 06649 | 08764 |
| 2401906 | 284 | 068 | 162 | 560 | 239 | 205 | 05688 | 24308 |
| 2401907 | 184 | 052 | 058 | 314 | 220 | 249 | 02553 | 04607 |
| 2401908 | 228 | 102 | 128 | 540 | 275 | 232 | 08473 | 15813 |
| 2401909 | 196 | 152 | 112 | 560 | 258 | 218 | 06597 | 16355 |
| 2401910 | 256 | 098 | 110 | 528 | 243 | 219 | 08703 | 17674 |
| 2401911 | 304 | 034 | 034 | 392 | 172 | 220 | 02473 | 01243 |
| 2401912 | 184 | 124 | 114 | 494 | 250 | 215 | 07306 | 21818 |
| 2401913 | 198 | 130 | 104 | 518 | 269 | 225 | 10683 | 15611 |
| 2401914 | 080 | 132 | 100 | 406 | 291 | 221 | 08944 | 15407 |
| 2401915 | 086 | 086 | 036 | 228 | 202 | 261 | 08142 | 01156 |
| 2401916 | 400 | 038 | 036 | 494 | 194 | 228 | 04978 | 03713 |
| 2401917 | 360 | 068 | 128 | 654 | 272 | 215 | 08075 | 12709 |
| 2401918 | 306 | 058 | 130 | 518 | 250 | 226 | 04978 | 21779 |
| 2401919 | 136 | 044 | 036 | 236 | 186 | 239 | 05964 | 00328 |
| 2401920 | 268 | 100 | 120 | 572 | 250 | 219 | 06820 | 13806 |

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-------|-------|
| 2102001 | 128 | 030 | 030 | 208 | 024 | 055 | 01891 | 02974 |
| 2102002 | 190 | 038 | 152 | 400 | 060 | 062 | 01339 | 16428 |
| 2102003 | 070 | 050 | 084 | 226 | 087 | 066 | 03557 | 13200 |
| 2102004 | 084 | 038 | 030 | 172 | 040 | 073 | 02124 | 02485 |
| 2102005 | 120 | 034 | 030 | 204 | 017 | 058 | 00626 | 02514 |
| 2102006 | 070 | 030 | 072 | 308 | 077 | 054 | 00994 | 08450 |
| 2102007 | 154 | 090 | 062 | 384 | 090 | 065 | 07914 | 05584 |
| 2102008 | 210 | 036 | 030 | 296 | 040 | 075 | 00524 | 02477 |
| 2102009 | 258 | 034 | 084 | 882 | 097 | 091 | 01014 | 21608 |
| 2102010 | 186 | 032 | 030 | 268 | 025 | 064 | 01723 | 02798 |
| 2102011 | 188 | 044 | 030 | 282 | 027 | 060 | 03270 | 03123 |
| 2102012 | 482 | 060 | 034 | 596 | 082 | 087 | 03361 | 03269 |
| 2102013 | 072 | 042 | 034 | 168 | 059 | 080 | 01757 | 03260 |
| 2102014 | 172 | 030 | 030 | 266 | 042 | 057 | 00407 | 00810 |
| 2102015 | 256 | 074 | 038 | 388 | 062 | 087 | 04963 | 03567 |
| 2102016 | 190 | 030 | 456 | 998 | 064 | 062 | 00947 | 46292 |
| 2102017 | 254 | 030 | 030 | 334 | 025 | 060 | 01888 | 02571 |
| 2102018 | 180 | 038 | 032 | 270 | 030 | 064 | 00755 | 01424 |
| 2102019 | 230 | 054 | 076 | 384 | 088 | 073 | 01777 | 09278 |
| 2102020 | 178 | 088 | 076 | 374 | 102 | 083 | 07202 | 09673 |
| 2202001 | 098 | 050 | 046 | 214 | 138 | 145 | 03081 | 05078 |
| 2202002 | 128 | 062 | 080 | 450 | 156 | 125 | 06104 | 08550 |
| 2202003 | 192 | 042 | 090 | 780 | 169 | 131 | 04324 | 08516 |
| 2202004 | 160 | 030 | 090 | 314 | 119 | 111 | 01967 | 08878 |
| 2202005 | 164 | 076 | 078 | 364 | 137 | 124 | 04270 | 08472 |
| 2202006 | 160 | 080 | 074 | 714 | 153 | 128 | 04831 | 07448 |
| 2202007 | 268 | 032 | 100 | 420 | 126 | 118 | 00800 | 11639 |
| 2202008 | 180 | 044 | 220 | 464 | 126 | 129 | 01155 | 27736 |
| 2202009 | 104 | 114 | 078 | 340 | 138 | 125 | 05645 | 07314 |
| 2202010 | 646 | 036 | 116 | 818 | 141 | 132 | 01295 | 13789 |
| 2202011 | 166 | 088 | 084 | 648 | 134 | 120 | 04932 | 08446 |
| 2202012 | 222 | 030 | 310 | 584 | 128 | 128 | 00263 | 25647 |
| 2202013 | 184 | 030 | 328 | 998 | 122 | 126 | 01013 | 29541 |
| 2202014 | 070 | 040 | 134 | 352 | 130 | 127 | 04105 | 06658 |
| 2202015 | 178 | 092 | 070 | 386 | 127 | 118 | 05608 | 05344 |
| 2202016 | 162 | 034 | 200 | 416 | 123 | 121 | 00661 | 29314 |
| 2202017 | 198 | 036 | 190 | 414 | 123 | 122 | 00976 | 25567 |
| 2202018 | 170 | 084 | 030 | 304 | 124 | 148 | 04131 | 01801 |
| 2202019 | 070 | 052 | 096 | 284 | 126 | 106 | 02438 | 09841 |
| 2202020 | 200 | 090 | 058 | 348 | 163 | 163 | 08866 | 05070 |
| 2402001 | 230 | 082 | 030 | 362 | 199 | 228 | 05301 | 01715 |
| 2402002 | 174 | 072 | 092 | 690 | 265 | 251 | 03901 | 09684 |
| 2402003 | 200 | 076 | 030 | 326 | 189 | 220 | 05860 | 01751 |
| 2402004 | 072 | 054 | 030 | 176 | 163 | 221 | 04854 | 01665 |
| 2402005 | 084 | 050 | 126 | 314 | 265 | 260 | 05325 | 11537 |
| 2402006 | 076 | 030 | 144 | 270 | 224 | 221 | 01119 | 20311 |
| 2402007 | 224 | 086 | 104 | 572 | 252 | 246 | 07353 | 10445 |
| 2402008 | 258 | 052 | 050 | 380 | 194 | 221 | 07871 | 02063 |
| 2402009 | 156 | 070 | 038 | 284 | 183 | 233 | 05021 | 01894 |
| 2402010 | 160 | 048 | 112 | 362 | 202 | 256 | 03508 | 11937 |
| 2402011 | 278 | 114 | 030 | 442 | 234 | 263 | 11069 | 00475 |
| 2402012 | 238 | 054 | 044 | 360 | 195 | 239 | 05903 | 02372 |
| 2402013 | 256 | 052 | 266 | 594 | 252 | 250 | 02734 | 18888 |
| 2402014 | 204 | 066 | 134 | 466 | 258 | 241 | 05446 | 13579 |
| 2402015 | 238 | 068 | 036 | 362 | 166 | 210 | 04165 | 01919 |
| 2402016 | 434 | 058 | 042 | 554 | 177 | 217 | 03390 | 02676 |
| 2402017 | 230 | 076 | 040 | 366 | 175 | 217 | 05687 | 02325 |
| 2402018 | 388 | 060 | 034 | 502 | 192 | 228 | 04548 | 00237 |
| 2402019 | 072 | 052 | 096 | 254 | 229 | 232 | 05469 | 09338 |
| 2402020 | 096 | 078 | 244 | 438 | 240 | 243 | 05606 | 16463 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102101 | 064 | 030 | 166 | 059 | 059 | 08016 | 00570 |
| 3102102 | 052 | 030 | 276 | 042 | 053 | 05546 | 02766 |
| 3102103 | 054 | 038 | 194 | 052 | 061 | 06091 | 01083 |
| 3102104 | 046 | 034 | 192 | 047 | 051 | 04620 | 01066 |
| 3102105 | 056 | 030 | 190 | 046 | 057 | 06314 | 00045 |
| 3102106 | 044 | 068 | 314 | 062 | 050 | 04220 | 02766 |
| 3102107 | 048 | 030 | 180 | 056 | 067 | 05017 | 00120 |
| 3102108 | 070 | 030 | 260 | 051 | 058 | 04785 | 00106 |
| 3102109 | 064 | 030 | 202 | 060 | 066 | 05752 | 00905 |
| 3102110 | 082 | 043 | 224 | 072 | 072 | 05223 | 02430 |
| 3102111 | 064 | 030 | 188 | 053 | 059 | 04952 | 00338 |
| 3102112 | 054 | 030 | 074 | 041 | 050 | 04575 | 01041 |
| 3102113 | 054 | 038 | 200 | 055 | 066 | 06560 | 00205 |
| 3102114 | 042 | 090 | 238 | 070 | 063 | 04220 | 04312 |
| 3102115 | 050 | 030 | 172 | 054 | 066 | 04235 | 00845 |
| 3102116 | 048 | 080 | 284 | 060 | 054 | 03044 | 04361 |
| 3102117 | 050 | 030 | 178 | 048 | 059 | 03883 | 00485 |
| 3102118 | 048 | 048 | 210 | 065 | 069 | 04712 | 02563 |
| 3102119 | 048 | 060 | 204 | 071 | 072 | 03253 | 04616 |
| 3102120 | 046 | 048 | 196 | 060 | 063 | 02843 | 02766 |
| 3202101 | 050 | 038 | 210 | 095 | 109 | 04779 | 02144 |
| 3202102 | 040 | 128 | 482 | 122 | 120 | 02546 | 11496 |
| 3202103 | 058 | 238 | 502 | 118 | 119 | 03417 | 14816 |
| 3202104 | 050 | 040 | 180 | 091 | 117 | 03450 | 00882 |
| 3202105 | 076 | 054 | 230 | 108 | 108 | 04727 | 01504 |
| 3202106 | 062 | 030 | 204 | 083 | 103 | 02998 | 00309 |
| 3202107 | 060 | 104 | 328 | 117 | 119 | 04461 | 03891 |
| 3202108 | 092 | 034 | 506 | 107 | 122 | 04974 | 00969 |
| 3202109 | 058 | 038 | 194 | 083 | 101 | 04057 | 00551 |
| 3202110 | 056 | 042 | 252 | 084 | 106 | 02349 | 00395 |
| 3202111 | 098 | 030 | 252 | 097 | 113 | 04660 | 00209 |
| 3202112 | 056 | 096 | 346 | 108 | 118 | 03090 | 04915 |
| 3202113 | 054 | 084 | 246 | 135 | 133 | 04939 | 06443 |
| 3202114 | 056 | 104 | 396 | 112 | 118 | 04130 | 06051 |
| 3202115 | 042 | 140 | 292 | 112 | 111 | 01766 | 04862 |
| 3202116 | 076 | 082 | 314 | 125 | 124 | 04880 | 03097 |
| 3202117 | 064 | 094 | 238 | 130 | 131 | 05271 | 05428 |
| 3202118 | 046 | 116 | 280 | 123 | 123 | 02020 | 10286 |
| 3202119 | 056 | 112 | 606 | 122 | 122 | 04532 | 05775 |
| 3202120 | 054 | 194 | 352 | 118 | 117 | 03011 | 12091 |
| 3402101 | 080 | 126 | 588 | 277 | 243 | 09305 | 14717 |
| 3402102 | 036 | 078 | 574 | 196 | 192 | 01185 | 08578 |
| 3402103 | 066 | 102 | 496 | 242 | 221 | 06820 | 13558 |
| 3402104 | 030 | 070 | 492 | 195 | 195 | 00423 | 09661 |
| 3402105 | 030 | 112 | 622 | 193 | 182 | 00172 | 12748 |
| 3402106 | 052 | 128 | 618 | 234 | 202 | 04217 | 15244 |
| 3402107 | 064 | 030 | 468 | 176 | 223 | 05617 | 01188 |
| 3402108 | 084 | 120 | 672 | 286 | 236 | 06309 | 11851 |
| 3402109 | 074 | 130 | 394 | 190 | 248 | 04555 | 00696 |
| 3402110 | 094 | 114 | 706 | 274 | 228 | 06979 | 13240 |
| 3402111 | 070 | 138 | 558 | 288 | 270 | 05703 | 11528 |
| 3402112 | 092 | 132 | 692 | 264 | 216 | 05307 | 09345 |
| 3402113 | 070 | 124 | 764 | 250 | 207 | 05472 | 17353 |
| 3402114 | 108 | 086 | 522 | 285 | 272 | 06725 | 12370 |
| 3402115 | 060 | 030 | 414 | 148 | 209 | 05171 | 00212 |
| 3402116 | 060 | 088 | 636 | 229 | 205 | 02587 | 10668 |
| 3402117 | 048 | 116 | 594 | 224 | 202 | 03187 | 12228 |
| 3402118 | 080 | 114 | 608 | 262 | 231 | 07749 | 14311 |
| 3402119 | 082 | 090 | 684 | 253 | 238 | 07202 | 12152 |
| 3402120 | 036 | 036 | 438 | 187 | 215 | 01894 | 03707 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102201 | 056 | 030 | 342 | 069 | 072 | 02919 | 01831 |
| 3102202 | 054 | 032 | 372 | 071 | 080 | 04617 | 01392 |
| 3102203 | 062 | 030 | 360 | 072 | 082 | 05515 | 00164 |
| 3102204 | 054 | 066 | 444 | 086 | 070 | 03136 | 05312 |
| 3102205 | 050 | 036 | 352 | 067 | 074 | 02319 | 01375 |
| 3102206 | 032 | 124 | 438 | 074 | 068 | 01647 | 07810 |
| 3102207 | 050 | 102 | 436 | 070 | 064 | 02083 | 06894 |
| 3102208 | 066 | 030 | 374 | 068 | 078 | 03682 | 00913 |
| 3102209 | 030 | 030 | 430 | 057 | 070 | 00789 | 02472 |
| 3102210 | 050 | 134 | 412 | 058 | 058 | 02323 | 10318 |
| 3102211 | 054 | 052 | 360 | 078 | 077 | 03679 | 03668 |
| 3102212 | 064 | 036 | 514 | 060 | 069 | 03394 | 00394 |
| 3102213 | 056 | 050 | 758 | 079 | 076 | 03923 | 01368 |
| 3102214 | 060 | 056 | 756 | 068 | 065 | 03997 | 03559 |
| 3102215 | 052 | 084 | 438 | 078 | 073 | 03553 | 04554 |
| 3102216 | 032 | 044 | 354 | 065 | 079 | 01058 | 02576 |
| 3102217 | 050 | 032 | 366 | 056 | 067 | 01780 | 01057 |
| 3102218 | 050 | 082 | 396 | 073 | 055 | 01886 | 04258 |
| 3102219 | 048 | 032 | 384 | 065 | 079 | 01556 | 02742 |
| 3102220 | 048 | 084 | 456 | 084 | 063 | 02859 | 05714 |
| 3202201 | 066 | 128 | 444 | 150 | 137 | 06264 | 11899 |
| 3202202 | 030 | 040 | 166 | 103 | 125 | 01231 | 03530 |
| 3202203 | 120 | 094 | 716 | 152 | 138 | 06233 | 07040 |
| 3202204 | 046 | 106 | 446 | 126 | 117 | 01459 | 08438 |
| 3202205 | 058 | 030 | 376 | 110 | 143 | 06409 | 01184 |
| 3202206 | 042 | 128 | 606 | 155 | 145 | 02919 | 08416 |
| 3202207 | 044 | 178 | 662 | 122 | 124 | 02790 | 17119 |
| 3202208 | 048 | 142 | 470 | 131 | 122 | 03900 | 14016 |
| 3202209 | 048 | 086 | 494 | 138 | 139 | 02003 | 08198 |
| 3202210 | 056 | 156 | 592 | 121 | 120 | 01839 | 11965 |
| 3202211 | 048 | 044 | 448 | 120 | 136 | 02763 | 04020 |
| 3202212 | 056 | 070 | 418 | 144 | 142 | 04759 | 06327 |
| 3202213 | 052 | 076 | 482 | 146 | 141 | 04371 | 07136 |
| 3202214 | 058 | 110 | 450 | 130 | 116 | 05206 | 11817 |
| 3202215 | 120 | 032 | 810 | 123 | 138 | 06298 | 01128 |
| 3202216 | 060 | 040 | 386 | 110 | 131 | 04595 | 02660 |
| 3202217 | 040 | 038 | 390 | 115 | 142 | 04504 | 01660 |
| 3202218 | 058 | 162 | 728 | 121 | 118 | 06193 | 21800 |
| 3202219 | 046 | 034 | 684 | 086 | 105 | 02865 | 02114 |
| 3202220 | 048 | 054 | 420 | 125 | 131 | 02333 | 05539 |
| 3402201 | 072 | 046 | 338 | 236 | 261 | 07496 | 05264 |
| 3402202 | 060 | 168 | 524 | 261 | 258 | 06124 | 11052 |
| 3402203 | 080 | 082 | 416 | 259 | 261 | 08522 | 09108 |
| 3402204 | 088 | 092 | 484 | 266 | 265 | 08687 | 11171 |
| 3402205 | 090 | 074 | 464 | 253 | 257 | 07914 | 08644 |
| 3402206 | 062 | 080 | 444 | 276 | 274 | 08595 | 12061 |
| 3402207 | 068 | 032 | 566 | 185 | 237 | 07408 | 02421 |
| 3402208 | 068 | 072 | 468 | 278 | 274 | 08433 | 10262 |
| 3402209 | 068 | 082 | 556 | 259 | 253 | 07618 | 09713 |
| 3402210 | 050 | 050 | 614 | 245 | 242 | 05652 | 10498 |
| 3402211 | 066 | 070 | 496 | 250 | 255 | 06570 | 09136 |
| 3402212 | 082 | 042 | 406 | 236 | 252 | 09575 | 04249 |
| 3402213 | 086 | 284 | 676 | 245 | 247 | 06958 | 18001 |
| 3402214 | 064 | 084 | 546 | 286 | 284 | 10427 | 12251 |
| 3402215 | 062 | 084 | 474 | 249 | 245 | 06995 | 08416 |
| 3402216 | 078 | 034 | 418 | 188 | 238 | 10173 | 04873 |
| 3402217 | 066 | 078 | 830 | 275 | 244 | 08614 | 07267 |
| 3402218 | 074 | 050 | 468 | 213 | 237 | 05575 | 04999 |
| 3402219 | 066 | 066 | 672 | 248 | 248 | 07995 | 04518 |
| 3402220 | 068 | 084 | 426 | 246 | 244 | 06267 | 10461 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102301 | 058 | 060 | 388 | 099 | 055 | 05888 | 03310 |
| 3102302 | 048 | 056 | 496 | 076 | 060 | 04123 | 04618 |
| 3102303 | 052 | 056 | 420 | 070 | 062 | 02841 | 02762 |
| 3102304 | 056 | 074 | 378 | 093 | 067 | 04112 | 07819 |
| 3102305 | 032 | 064 | 346 | 050 | 046 | 00778 | 04324 |
| 3102306 | 058 | 048 | 322 | 084 | 084 | 05226 | 01919 |
| 3102307 | 088 | 048 | 272 | 069 | 066 | 04857 | 04111 |
| 3102308 | 050 | 090 | 342 | 063 | 054 | 01566 | 10742 |
| 3102309 | 074 | 056 | 252 | 080 | 080 | 07009 | 02113 |
| 3102310 | 064 | 110 | 324 | 055 | 052 | 02001 | 09366 |
| 3102311 | 034 | 056 | 256 | 075 | 074 | 01727 | 05944 |
| 3102312 | 048 | 098 | 352 | 073 | 049 | 02557 | 06948 |
| 3102313 | 048 | 088 | 392 | 053 | 041 | 02145 | 03949 |
| 3102314 | 086 | 046 | 308 | 071 | 072 | 05770 | 00988 |
| 3102315 | 032 | 106 | 334 | 085 | 065 | 01007 | 17065 |
| 3102316 | 076 | 066 | 428 | 094 | 060 | 05625 | 04549 |
| 3102317 | 054 | 080 | 358 | 059 | 046 | 03447 | 07678 |
| 3102318 | 066 | 066 | 420 | 091 | 060 | 05270 | 03975 |
| 3102319 | 048 | 078 | 354 | 086 | 073 | 03867 | 05140 |
| 3102320 | 072 | 046 | 360 | 079 | 079 | 07558 | 02740 |
| 3202301 | 060 | 052 | 524 | 165 | 142 | 05962 | 04557 |
| 3202302 | 052 | 054 | 296 | 143 | 155 | 04194 | 03279 |
| 3202303 | 086 | 042 | 302 | 128 | 147 | 06237 | 01258 |
| 3202304 | 058 | 048 | 338 | 142 | 148 | 04148 | 03149 |
| 3202305 | 052 | 072 | 386 | 157 | 152 | 03311 | 06969 |
| 3202306 | 072 | 044 | 352 | 128 | 128 | 05036 | 03176 |
| 3202307 | 078 | 042 | 314 | 143 | 146 | 06463 | 03080 |
| 3202308 | 076 | 060 | 310 | 148 | 148 | 04230 | 05088 |
| 3202309 | 064 | 050 | 516 | 158 | 138 | 05947 | 04608 |
| 3202310 | 090 | 142 | 412 | 122 | 122 | 08491 | 00720 |
| 3202311 | 072 | 038 | 304 | 121 | 139 | 03283 | 03249 |
| 3202312 | 072 | 052 | 406 | 158 | 158 | 08607 | 03298 |
| 3202313 | 076 | 068 | 398 | 159 | 152 | 05336 | 03123 |
| 3202314 | 034 | 046 | 450 | 119 | 119 | 00855 | 02207 |
| 3202315 | 058 | 368 | 690 | 131 | 136 | 06018 | 35977 |
| 3202316 | 088 | 034 | 434 | 139 | 139 | 16278 | 01161 |
| 3202317 | 056 | 042 | 364 | 147 | 147 | 08345 | 03374 |
| 3202318 | 062 | 052 | 680 | 127 | 129 | 05070 | 04046 |
| 3202319 | 072 | 052 | 406 | 158 | 158 | 08600 | 03498 |
| 3202320 | 090 | 140 | 401 | 126 | 128 | 08491 | 03476 |
| 3402301 | 062 | 064 | 394 | 288 | 288 | 10143 | 10829 |
| 3402302 | 030 | 068 | 320 | 224 | 263 | 00382 | 16048 |
| 3402303 | 040 | 094 | 396 | 287 | 287 | 07540 | 21580 |
| 3402304 | 040 | 146 | 452 | 257 | 257 | 03865 | 29006 |
| 3402305 | 048 | 140 | 346 | 272 | 266 | 04438 | 12215 |
| 3402306 | 066 | 036 | 244 | 184 | 234 | 07176 | 00745 |
| 3402307 | 064 | 098 | 370 | 287 | 281 | 11741 | 10971 |
| 3402308 | 058 | 116 | 268 | 250 | 243 | 07441 | 15038 |
| 3402309 | 094 | 116 | 502 | 277 | 240 | 16446 | 12377 |
| 3402310 | 078 | 102 | 304 | 262 | 262 | 08794 | 11762 |
| 3402311 | 036 | 154 | 306 | 259 | 259 | 03377 | 23893 |
| 3402312 | 088 | 148 | 414 | 261 | 248 | 08758 | 24215 |
| 3402313 | 030 | 066 | 352 | 242 | 280 | 02115 | 12962 |
| 3402314 | 030 | 142 | 332 | 262 | 262 | 03999 | 20977 |
| 3402315 | 032 | 184 | 370 | 258 | 253 | 02255 | 27207 |
| 3402316 | 054 | 124 | 432 | 262 | 245 | 07126 | 18635 |
| 3402317 | 076 | 142 | 460 | 258 | 245 | 13549 | 23303 |
| 3402318 | 088 | 068 | 366 | 285 | 285 | 17905 | 05818 |
| 3402319 | 084 | 098 | 370 | 261 | 261 | 10134 | 15718 |
| 3402320 | 054 | 036 | 282 | 202 | 251 | 09633 | 01418 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102401 | 074 | 074 | 410 | 107 | 062 | 07761 | 07374 |
| 3102402 | 096 | 048 | 786 | 111 | 067 | 11901 | 06304 |
| 3102403 | 070 | 100 | 464 | 103 | 076 | 06715 | 10868 |
| 3102404 | 040 | 114 | 366 | 095 | 066 | 01651 | 12200 |
| 3102405 | 086 | 092 | 348 | 106 | 080 | 07769 | 11560 |
| 3102406 | 044 | 030 | 254 | 030 | 072 | 05109 | 01540 |
| 3102407 | 086 | 086 | 392 | 109 | 076 | 07745 | 11657 |
| 3102408 | 070 | 086 | 338 | 105 | 072 | 06841 | 07849 |
| 3102409 | 084 | 430 | 998 | 074 | 067 | 06187 | 13606 |
| 3102410 | 084 | 078 | 410 | 087 | 062 | 05501 | 09728 |
| 3102411 | 102 | 082 | 398 | 099 | 063 | 06375 | 10976 |
| 3102412 | 074 | 310 | 998 | 074 | 065 | 06714 | 07985 |
| 3102413 | 088 | 352 | 998 | 061 | 063 | 10141 | 41390 |
| 3102414 | 100 | 518 | 996 | 066 | 068 | 07273 | 10778 |
| 3102415 | 054 | 032 | 332 | 030 | 073 | 02352 | 03225 |
| 3102416 | 034 | 030 | 298 | 018 | 063 | 02411 | 03677 |
| 3102417 | 074 | 106 | 462 | 092 | 079 | 07116 | 12201 |
| 3102418 | 080 | 094 | 538 | 097 | 074 | 06099 | 12110 |
| 3102419 | 096 | 086 | 452 | 101 | 054 | 09231 | 10809 |
| 3102420 | 078 | 098 | 452 | 094 | 076 | 06622 | 10030 |
| 3202401 | 084 | 118 | 328 | 142 | 142 | 05781 | 04617 |
| 3202402 | 088 | 092 | 308 | 131 | 133 | 04200 | 02405 |
| 3202403 | 146 | 046 | 292 | 113 | 130 | 06770 | 01249 |
| 3202404 | 044 | 104 | 424 | 149 | 132 | 05006 | 10359 |
| 3202405 | 080 | 196 | 478 | 123 | 124 | 05375 | 19143 |
| 3202406 | 062 | 108 | 342 | 132 | 133 | 03359 | 09335 |
| 3202407 | 034 | 160 | 286 | 145 | 146 | 02510 | 09176 |
| 3202408 | 050 | 110 | 288 | 147 | 137 | 04739 | 07096 |
| 3202409 | 132 | 082 | 760 | 165 | 133 | 13274 | 08346 |
| 3202410 | 080 | 104 | 484 | 155 | 125 | 06914 | 07602 |
| 3202411 | 058 | 164 | 328 | 140 | 132 | 04113 | 10137 |
| 3202412 | 062 | 040 | 254 | 135 | 159 | 05292 | 03578 |
| 3202413 | 064 | 138 | 392 | 139 | 138 | 06336 | 09515 |
| 3202414 | 070 | 090 | 464 | 151 | 137 | 07925 | 07756 |
| 3202415 | 054 | 106 | 546 | 170 | 149 | 06806 | 15379 |
| 3202416 | 060 | 116 | 480 | 171 | 150 | 05537 | 19471 |
| 3202417 | 062 | 104 | 370 | 169 | 154 | 05433 | 15533 |
| 3202418 | 064 | 332 | 668 | 133 | 131 | 06661 | 35984 |
| 3202419 | 072 | 128 | 354 | 161 | 152 | 05474 | 16519 |
| 3202420 | 066 | 096 | 436 | 163 | 127 | 07510 | 10192 |
| 3402401 | 078 | 088 | 224 | 301 | 245 | 09691 | 10583 |
| 3402402 | 066 | 040 | 692 | 211 | 286 | 07146 | 05385 |
| 3402403 | 076 | 104 | 674 | 288 | 256 | 11273 | 11792 |
| 3402404 | 072 | 098 | 424 | 286 | 286 | 10928 | 14398 |
| 3402405 | 080 | 108 | 242 | 290 | 260 | 10194 | 15444 |
| 3402406 | 088 | 110 | 326 | 294 | 256 | 11489 | 15518 |
| 3402407 | 062 | 128 | 294 | 276 | 236 | 06766 | 18510 |
| 3402408 | 080 | 084 | 590 | 287 | 253 | 09833 | 08859 |
| 3402409 | 072 | 036 | 384 | 215 | 266 | 08993 | 02710 |
| 3402410 | 112 | 038 | 258 | 202 | 265 | 14900 | 03157 |
| 3402411 | 062 | 036 | 248 | 217 | 272 | 10962 | 02057 |
| 3402412 | 078 | 078 | 594 | 320 | 263 | 13960 | 12626 |
| 3402413 | 056 | 040 | 338 | 146 | 212 | 08194 | 09683 |
| 3402414 | 070 | 082 | 442 | 281 | 267 | 10040 | 06895 |
| 3402415 | 080 | 118 | 612 | 290 | 268 | 13797 | 20229 |
| 3402416 | 058 | 032 | 432 | 133 | 210 | 07177 | 00913 |
| 3402417 | 060 | 076 | 400 | 305 | 259 | 09167 | 17643 |
| 3402418 | 078 | 078 | 802 | 278 | 253 | 08497 | 12824 |
| 3402419 | 090 | 078 | 674 | 281 | 245 | 14287 | 10760 |
| 3402420 | 080 | 030 | 368 | 187 | 242 | 06578 | 01447 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102501 | 068 | 046 | 302 | 081 | 078 | 07247 | 04930 |
| 3102502 | 062 | 046 | 464 | 084 | 073 | 05739 | 03089 |
| 3102503 | 070 | 078 | 364 | 080 | 070 | 05129 | 09298 |
| 3102504 | 058 | 042 | 330 | 080 | 079 | 06047 | 04550 |
| 3102505 | 038 | 102 | 402 | 067 | 055 | 01874 | 08926 |
| 3102506 | 064 | 066 | 610 | 079 | 070 | 04661 | 07479 |
| 3102507 | 056 | 064 | 298 | 080 | 075 | 03008 | 04774 |
| 3102508 | 066 | 108 | 392 | 071 | 064 | 02276 | 08237 |
| 3102509 | 030 | 116 | 410 | 071 | 061 | 01509 | 09027 |
| 3102510 | 038 | 084 | 418 | 072 | 058 | 02294 | 07221 |
| 3102511 | 030 | 094 | 518 | 063 | 055 | 01199 | 10063 |
| 3102512 | 068 | 070 | 406 | 086 | 065 | 06955 | 07036 |
| 3102513 | 038 | 054 | 356 | 080 | 076 | 02442 | 04959 |
| 3102514 | 044 | 112 | 386 | 065 | 058 | 02007 | 11358 |
| 3102515 | 036 | 080 | 870 | 062 | 057 | 01539 | 06452 |
| 3102516 | 052 | 108 | 486 | 071 | 063 | 03717 | 08924 |
| 3102517 | 030 | 136 | 464 | 056 | 054 | 01364 | 11849 |
| 3102518 | 042 | 044 | 802 | 064 | 065 | 03290 | 02527 |
| 3102519 | 038 | 052 | 382 | 086 | 077 | 02490 | 06911 |
| 3102520 | 048 | 044 | 808 | 081 | 056 | 03200 | 05448 |
| 3202501 | 096 | 146 | 366 | 118 | 117 | 10796 | 24720 |
| 3202502 | 060 | 048 | 270 | 104 | 115 | 05537 | 02551 |
| 3202503 | 044 | 032 | 264 | 102 | 118 | 04452 | 01528 |
| 3202504 | 060 | 096 | 446 | 142 | 131 | 05673 | 07541 |
| 3202505 | 100 | 034 | 240 | 111 | 117 | 08730 | 01583 |
| 3202506 | 062 | 102 | 328 | 116 | 116 | 04145 | 05615 |
| 3202507 | 066 | 062 | 294 | 119 | 127 | 06676 | 01940 |
| 3202508 | 114 | 066 | 396 | 134 | 123 | 10664 | 03680 |
| 3202509 | 064 | 030 | 366 | 099 | 113 | 04691 | 01110 |
| 3202510 | 092 | 068 | 296 | 139 | 139 | 09400 | 03837 |
| 3202511 | 122 | 056 | 348 | 139 | 137 | 17585 | 04274 |
| 3202512 | 076 | 062 | 908 | 124 | 129 | 08650 | 04298 |
| 3202513 | 074 | 052 | 312 | 104 | 115 | 04743 | 03055 |
| 3202514 | 088 | 034 | 386 | 120 | 120 | 11293 | 03319 |
| 3202515 | 064 | 044 | 902 | 132 | 129 | 06172 | 04543 |
| 3202516 | 102 | 050 | 372 | 137 | 136 | 14365 | 02679 |
| 3202517 | 092 | 054 | 422 | 136 | 136 | 11073 | 04724 |
| 3202518 | 090 | 050 | 448 | 149 | 148 | 14210 | 04997 |
| 3202519 | 086 | 056 | 622 | 143 | 131 | 11902 | 03136 |
| 3202520 | 050 | 092 | 554 | 137 | 121 | 05725 | 07954 |
| 3402501 | 080 | 032 | 400 | 188 | 241 | 10026 | 01110 |
| 3402502 | 092 | 034 | 430 | 204 | 233 | 11637 | 02637 |
| 3402503 | 098 | 036 | 474 | 221 | 250 | 10928 | 01583 |
| 3402504 | 076 | 110 | 530 | 251 | 237 | 06996 | 15436 |
| 3402505 | 074 | 128 | 572 | 259 | 250 | 06298 | 18029 |
| 3402506 | 102 | 074 | 842 | 256 | 253 | 11951 | 07532 |
| 3402507 | 082 | 034 | 448 | 196 | 232 | 09820 | 01328 |
| 3402508 | 082 | 112 | 896 | 246 | 242 | 11663 | 11997 |
| 3402509 | 104 | 092 | 502 | 260 | 236 | 12920 | 11241 |
| 3402510 | 088 | 100 | 556 | 252 | 242 | 10585 | 11384 |
| 3402511 | 086 | 094 | 488 | 253 | 230 | 10205 | 14530 |
| 3402512 | 096 | 108 | 468 | 251 | 251 | 09665 | 14749 |
| 3402513 | 086 | 088 | 513 | 245 | 246 | 11876 | 08273 |
| 3402514 | 080 | 110 | 480 | 266 | 254 | 11552 | 14872 |
| 3402515 | 072 | 118 | 564 | 246 | 222 | 05200 | 17653 |
| 3402516 | 080 | 086 | 460 | 254 | 251 | 10737 | 09762 |
| 3402517 | 104 | 074 | 470 | 262 | 253 | 13885 | 11904 |
| 3402518 | 100 | 064 | 460 | 259 | 259 | 11881 | 09651 |
| 3402519 | 080 | 110 | 548 | 255 | 234 | 08204 | 15520 |
| 3402520 | 080 | 032 | 424 | 185 | 222 | 09113 | 04504 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102601 | 062 | 050 | 226 | 080 | 080 | 04697 | 04213 |
| 3102602 | 054 | 056 | 318 | 092 | 079 | 05836 | 07219 |
| 3102603 | 048 | 030 | 178 | 067 | 076 | 03177 | 00495 |
| 3102604 | 048 | 078 | 326 | 083 | 074 | 02522 | 05290 |
| 3102605 | 090 | 066 | 372 | 096 | 067 | 09620 | 09023 |
| 3102606 | 048 | 030 | 284 | 073 | 085 | 02900 | 01659 |
| 3102607 | 062 | 030 | 252 | 084 | 093 | 06947 | 01164 |
| 3102608 | 066 | 050 | 244 | 085 | 085 | 03534 | 02741 |
| 3102609 | 062 | 066 | 378 | 067 | 061 | 03023 | 03157 |
| 3102610 | 058 | 064 | 262 | 077 | 066 | 03829 | 05320 |
| 3102611 | 054 | 058 | 270 | 086 | 078 | 04231 | 05523 |
| 3102612 | 062 | 072 | 322 | 083 | 068 | 03599 | 07567 |
| 3102613 | 070 | 048 | 274 | 075 | 075 | 04367 | 03164 |
| 3102614 | 054 | 058 | 312 | 081 | 060 | 03262 | 05542 |
| 3102615 | 046 | 048 | 244 | 086 | 086 | 04170 | 02234 |
| 3102616 | 048 | 064 | 306 | 080 | 070 | 02912 | 05824 |
| 3102617 | 038 | 046 | 320 | 088 | 066 | 02874 | 03616 |
| 3102618 | 072 | 050 | 236 | 086 | 086 | 05718 | 02192 |
| 3102619 | 056 | 066 | 280 | 093 | 081 | 04388 | 07488 |
| 3102620 | 066 | 046 | 664 | 093 | 080 | 07806 | 02782 |
| 3202601 | 068 | 048 | 356 | 117 | 129 | 05540 | 02290 |
| 3202602 | 066 | 054 | 290 | 117 | 125 | 04655 | 02897 |
| 3202603 | 074 | 036 | 232 | 093 | 112 | 02560 | 01690 |
| 3202604 | 074 | 030 | 232 | 118 | 145 | 06615 | 00685 |
| 3202605 | 094 | 048 | 306 | 116 | 128 | 08780 | 00676 |
| 3202606 | 072 | 030 | 240 | 090 | 115 | 04328 | 01142 |
| 3202607 | 066 | 048 | 328 | 108 | 135 | 02923 | 01608 |
| 3202608 | 074 | 030 | 286 | 103 | 132 | 04465 | 00268 |
| 3202609 | 066 | 038 | 258 | 120 | 142 | 04390 | 01142 |
| 3202610 | 062 | 032 | 332 | 084 | 106 | 03229 | 00402 |
| 3202611 | 052 | 096 | 348 | 146 | 135 | 03860 | 07883 |
| 3202612 | 080 | 052 | 282 | 142 | 146 | 07454 | 05171 |
| 3202613 | 042 | 030 | 210 | 103 | 136 | 04147 | 00918 |
| 3202614 | 072 | 070 | 330 | 154 | 148 | 05789 | 06091 |
| 3202615 | 052 | 048 | 192 | 116 | 124 | 02824 | 05829 |
| 3202616 | 056 | 060 | 270 | 127 | 129 | 04035 | 06476 |
| 3202617 | 072 | 074 | 650 | 139 | 135 | 05366 | 03256 |
| 3202618 | 064 | 068 | 582 | 133 | 141 | 06379 | 06137 |
| 3202619 | 066 | 032 | 248 | 114 | 131 | 05494 | 00824 |
| 3202620 | 064 | 036 | 236 | 103 | 117 | 05730 | 02843 |
| 3402601 | 084 | 032 | 290 | 211 | 252 | 12971 | 02104 |
| 3402602 | 106 | 360 | 998 | 233 | 251 | 15125 | 78091 |
| 3402603 | 076 | 060 | 310 | 243 | 243 | 10298 | 06045 |
| 3402604 | 074 | 128 | 408 | 259 | 257 | 09281 | 13326 |
| 3402605 | 068 | 106 | 396 | 259 | 259 | 07599 | 12286 |
| 3402606 | 098 | 052 | 300 | 247 | 282 | 12532 | 04107 |
| 3402607 | 086 | 068 | 340 | 243 | 243 | 14460 | 07786 |
| 3402608 | 064 | 116 | 522 | 278 | 246 | 10752 | 11542 |
| 3402609 | 092 | 076 | 390 | 259 | 259 | 11323 | 10776 |
| 3402610 | 084 | 102 | 374 | 267 | 263 | 08307 | 11887 |
| 3402611 | 098 | 100 | 392 | 282 | 251 | 13191 | 11840 |
| 3402612 | 092 | 084 | 320 | 276 | 270 | 11837 | 13163 |
| 3402613 | 084 | 096 | 374 | 287 | 276 | 12483 | 12620 |
| 3402614 | 088 | 082 | 474 | 263 | 244 | 11997 | 08333 |
| 3402615 | 064 | 096 | 362 | 251 | 251 | 09587 | 10716 |
| 3402616 | 084 | 092 | 904 | 301 | 256 | 11235 | 13266 |
| 3402617 | 084 | 134 | 460 | 256 | 243 | 10944 | 16507 |
| 3402618 | 056 | 108 | 470 | 281 | 271 | 09248 | 15444 |
| 3402619 | 080 | 034 | 274 | 179 | 234 | 11724 | 01230 |
| 3402620 | 100 | 314 | 998 | 246 | 246 | 13227 | 21051 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102701 | 070 | 068 | 406 | 079 | 074 | 02786 | 05197 |
| 3102702 | 066 | 072 | 714 | 074 | 064 | 03150 | 03343 |
| 3102703 | 066 | 044 | 716 | 079 | 071 | 05066 | 03051 |
| 3102704 | 046 | 090 | 396 | 078 | 072 | 01606 | 06376 |
| 3102705 | 060 | 074 | 374 | 072 | 060 | 02652 | 04475 |
| 3102706 | 046 | 106 | 340 | 070 | 060 | 02344 | 06262 |
| 3102707 | 062 | 052 | 472 | 074 | 062 | 05054 | 04233 |
| 3102708 | 042 | 068 | 328 | 056 | 057 | 01471 | 03110 |
| 3102709 | 062 | 104 | 450 | 077 | 070 | 03371 | 06108 |
| 3102710 | 060 | 088 | 352 | 069 | 067 | 01813 | 04918 |
| 3102711 | 078 | 046 | 290 | 077 | 077 | 07360 | 02947 |
| 3102712 | 056 | 086 | 442 | 079 | 066 | 03498 | 04335 |
| 3102713 | 056 | 042 | 280 | 059 | 065 | 02263 | 02285 |
| 3102714 | 062 | 038 | 340 | 064 | 071 | 03584 | 02648 |
| 3102715 | 058 | 064 | 378 | 072 | 068 | 03568 | 04585 |
| 3102716 | 072 | 076 | 598 | 063 | 055 | 03223 | 03654 |
| 3102717 | 064 | 062 | 402 | 080 | 069 | 03587 | 04819 |
| 3102718 | 044 | 092 | 618 | 069 | 063 | 02486 | 06045 |
| 3102719 | 044 | 084 | 464 | 072 | 059 | 02070 | 05126 |
| 3102720 | 064 | 058 | 512 | 069 | 066 | 04247 | 03405 |
| 3202701 | 044 | 304 | 728 | 119 | 123 | 01804 | 18308 |
| 3202702 | 070 | 080 | 662 | 135 | 135 | 04653 | 04099 |
| 3202703 | 066 | 068 | 754 | 121 | 134 | 04057 | 07397 |
| 3202704 | 072 | 064 | 454 | 144 | 127 | 07547 | 05590 |
| 3202705 | 050 | 124 | 362 | 149 | 138 | 03815 | 13201 |
| 3202706 | 066 | 094 | 388 | 135 | 137 | 05529 | 08448 |
| 3202707 | 084 | 052 | 476 | 123 | 123 | 08017 | 04342 |
| 3202708 | 076 | 080 | 374 | 138 | 136 | 05527 | 07943 |
| 3202709 | 068 | 140 | 660 | 123 | 116 | 05368 | 13826 |
| 3202710 | 070 | 340 | 996 | 121 | 127 | 09610 | 53268 |
| 3202711 | 066 | 100 | 650 | 146 | 144 | 06019 | 08833 |
| 3202712 | 076 | 092 | 488 | 124 | 121 | 05937 | 07461 |
| 3202713 | 074 | 080 | 804 | 139 | 139 | 08443 | 04767 |
| 3202714 | 078 | 036 | 442 | 125 | 139 | 06124 | 05255 |
| 3202715 | 076 | 072 | 696 | 158 | 126 | 11252 | 04192 |
| 3202716 | 074 | 302 | 996 | 122 | 124 | 08140 | 28709 |
| 3202717 | 060 | 062 | 586 | 126 | 126 | 06870 | 04150 |
| 3202718 | 050 | 254 | 962 | 125 | 119 | 03365 | 08392 |
| 3202719 | 070 | 090 | 746 | 155 | 131 | 09618 | 03800 |
| 3202720 | 070 | 088 | 606 | 139 | 139 | 10014 | 05980 |
| 3402701 | 088 | 102 | 768 | 241 | 242 | 07457 | 12435 |
| 3402702 | 078 | 030 | 700 | 163 | 241 | 10152 | 00221 |
| 3402703 | 090 | 134 | 490 | 242 | 244 | 09559 | 10027 |
| 3402704 | 080 | 088 | 396 | 245 | 251 | 06259 | 08606 |
| 3402705 | 080 | 438 | 832 | 245 | 243 | 07605 | 52302 |
| 3402706 | 072 | 084 | 516 | 226 | 241 | 09858 | 07348 |
| 3402707 | 082 | 082 | 662 | 266 | 253 | 12507 | 10112 |
| 3402708 | 078 | 030 | 346 | 184 | 221 | 09067 | 00557 |
| 3402709 | 082 | 128 | 590 | 240 | 236 | 06798 | 12662 |
| 3402710 | 086 | 128 | 556 | 234 | 238 | 07517 | 13339 |
| 3402711 | 078 | 350 | 998 | 248 | 246 | 06951 | 55069 |
| 3402712 | 058 | 178 | 416 | 240 | 232 | 05151 | 14697 |
| 3402713 | 066 | 082 | 354 | 246 | 249 | 09302 | 07737 |
| 3402714 | 076 | 142 | 472 | 252 | 248 | 08623 | 13257 |
| 3402715 | 064 | 162 | 576 | 241 | 236 | 06299 | 14347 |
| 3402716 | 080 | 040 | 340 | 192 | 221 | 07489 | 02980 |
| 3402717 | 076 | 142 | 484 | 253 | 242 | 07345 | 14208 |
| 3402718 | 078 | 094 | 440 | 250 | 247 | 10945 | 11166 |
| 3402719 | 072 | 144 | 480 | 233 | 232 | 08257 | 13842 |
| 3402720 | 076 | 146 | 534 | 245 | 246 | 06618 | 14206 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102801 | 048 | 116 | 628 | 068 | 062 | 01755 | 11119 |
| 3102802 | 074 | 070 | 698 | 102 | 080 | 05954 | 08263 |
| 3102803 | 070 | 048 | 646 | 081 | 066 | 07037 | 02808 |
| 3102804 | 056 | 062 | 664 | 102 | 072 | 03168 | 07651 |
| 3102805 | 054 | 062 | 536 | 083 | 077 | 03158 | 05283 |
| 3102806 | 068 | 042 | 712 | 093 | 065 | 08757 | 02240 |
| 3102807 | 060 | 066 | 860 | 090 | 066 | 02940 | 06200 |
| 3102808 | 030 | 056 | 352 | 057 | 055 | 00409 | 01793 |
| 3102809 | 046 | 138 | 466 | 064 | 056 | 01643 | 01214 |
| 3102810 | 070 | 054 | 436 | 088 | 085 | 05418 | 02531 |
| 3102811 | 048 | 132 | 468 | 056 | 054 | 00167 | 09332 |
| 3102812 | 062 | 066 | 518 | 090 | 062 | 04288 | 02788 |
| 3102813 | 042 | 110 | 502 | 082 | 070 | 01793 | 08602 |
| 3102814 | 030 | 058 | 556 | 061 | 056 | 00371 | 02615 |
| 3102815 | 054 | 072 | 388 | 083 | 075 | 04207 | 04358 |
| 3102816 | 042 | 112 | 472 | 071 | 061 | 01712 | 08465 |
| 3102817 | 070 | 058 | 630 | 078 | 066 | 06594 | 02996 |
| 3102818 | 070 | 076 | 760 | 084 | 066 | 02747 | 05200 |
| 3102819 | 056 | 078 | 508 | 088 | 064 | 04376 | 07732 |
| 3102820 | 056 | 066 | 442 | 082 | 065 | 03222 | 05791 |
| 3202801 | 082 | 084 | 854 | 123 | 128 | 06933 | 06105 |
| 3202802 | 144 | 076 | 976 | 116 | 127 | 07756 | 01738 |
| 3202803 | 094 | 108 | 368 | 117 | 118 | 03644 | 03074 |
| 3202804 | 078 | 092 | 760 | 127 | 131 | 04360 | 05496 |
| 3202805 | 084 | 034 | 272 | 085 | 110 | 05523 | 00491 |
| 3202806 | 102 | 112 | 428 | 128 | 125 | 02312 | 06368 |
| 3202807 | 034 | 206 | 410 | 118 | 115 | 00963 | 10929 |
| 3202808 | 050 | 136 | 276 | 131 | 126 | 03606 | 12460 |
| 3202809 | 062 | 038 | 328 | 095 | 124 | 02572 | 01409 |
| 3202810 | 084 | 070 | 260 | 111 | 124 | 03965 | 03052 |
| 3202811 | 062 | 038 | 212 | 076 | 112 | 02633 | 00534 |
| 3202812 | 070 | 040 | 338 | 113 | 125 | 03522 | 00519 |
| 3202813 | 098 | 040 | 434 | 134 | 134 | 09123 | 01958 |
| 3202814 | 052 | 052 | 222 | 091 | 113 | 01577 | 03235 |
| 3202815 | 064 | 136 | 400 | 131 | 118 | 04215 | 10765 |
| 3202816 | 064 | 120 | 372 | 139 | 132 | 02560 | 11227 |
| 3202817 | 084 | 038 | 242 | 108 | 124 | 04126 | 00892 |
| 3202818 | 050 | 134 | 924 | 139 | 130 | 01765 | 12179 |
| 3202819 | 058 | 048 | 238 | 099 | 118 | 02649 | 02448 |
| 3202820 | 068 | 098 | 514 | 126 | 125 | 03886 | 09641 |
| 3402801 | 112 | 064 | 334 | 223 | 247 | 09412 | 01690 |
| 3402802 | 104 | 032 | 300 | 208 | 232 | 10451 | 01280 |
| 3402803 | 108 | 116 | 390 | 247 | 247 | 08589 | 05717 |
| 3402804 | 062 | 046 | 254 | 196 | 234 | 05298 | 01628 |
| 3402805 | 062 | 030 | 238 | 163 | 210 | 04355 | 00282 |
| 3402806 | 084 | 074 | 330 | 252 | 261 | 06242 | 04728 |
| 3402807 | 078 | 030 | 424 | 184 | 224 | 05263 | 02360 |
| 3402808 | 088 | 034 | 414 | 216 | 246 | 09869 | 01795 |
| 3402809 | 070 | 156 | 620 | 262 | 243 | 06552 | 13217 |
| 3402810 | 094 | 128 | 436 | 271 | 267 | 07075 | 09973 |
| 3402811 | 104 | 076 | 404 | 241 | 241 | 09556 | 05307 |
| 3402812 | 082 | 030 | 348 | 185 | 219 | 06203 | 01702 |
| 3402813 | 134 | 056 | 404 | 230 | 243 | 11144 | 04142 |
| 3402814 | 090 | 030 | 362 | 202 | 240 | 06408 | 01347 |
| 3402815 | 116 | 090 | 392 | 260 | 262 | 09204 | 06360 |
| 3402816 | 096 | 070 | 356 | 249 | 259 | 09986 | 04998 |
| 3402817 | 092 | 070 | 408 | 256 | 256 | 11137 | 05156 |
| 3402818 | 094 | 124 | 574 | 265 | 255 | 07253 | 09592 |
| 3402819 | 074 | 038 | 334 | 204 | 244 | 06618 | 01835 |
| 3402820 | 090 | 100 | 406 | 264 | 262 | 09929 | 05073 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3102901 | 060 | 072 | 520 | 068 | 049 | 04798 | 11781 |
| 3102902 | 076 | 096 | 484 | 058 | 049 | 08041 | 17132 |
| 3102903 | 068 | 098 | 446 | 065 | 046 | 04412 | 23905 |
| 3102904 | 060 | 088 | 556 | 097 | 056 | 05588 | 07599 |
| 3102905 | 062 | 098 | 550 | 068 | 050 | 06630 | 16129 |
| 3102906 | 050 | 070 | 546 | 089 | 061 | 02999 | 09399 |
| 3102907 | 060 | 070 | 538 | 073 | 057 | 05606 | 09858 |
| 3102908 | 064 | 096 | 420 | 061 | 049 | 02937 | 15257 |
| 3102909 | 064 | 084 | 496 | 069 | 046 | 02534 | 06976 |
| 3102910 | 060 | 080 | 482 | 073 | 043 | 04537 | 10392 |
| 3102911 | 036 | 038 | 330 | 072 | 089 | 02339 | 00845 |
| 3102912 | 062 | 056 | 524 | 082 | 045 | 04738 | 08186 |
| 3102913 | 050 | 080 | 468 | 068 | 041 | 02628 | 10388 |
| 3102914 | 052 | 074 | 496 | 076 | 045 | 03984 | 07828 |
| 3102915 | 068 | 046 | 540 | 095 | 063 | 06081 | 09116 |
| 3102916 | 072 | 072 | 508 | 084 | 058 | 07124 | 09361 |
| 3102917 | 060 | 122 | 514 | 059 | 053 | 06198 | 19069 |
| 3102918 | 060 | 074 | 614 | 071 | 054 | 04877 | 08103 |
| 3102919 | 070 | 056 | 582 | 095 | 067 | 03606 | 15227 |
| 3102920 | 054 | 030 | 378 | 064 | 070 | 04397 | 00244 |
| 3202901 | 080 | 080 | 668 | 175 | 118 | 09480 | 14881 |
| 3202902 | 074 | 076 | 604 | 176 | 136 | 11183 | 09330 |
| 3202903 | 068 | 070 | 532 | 140 | 116 | 07103 | 11508 |
| 3202904 | 056 | 090 | 572 | 153 | 105 | 05864 | 13197 |
| 3202905 | 056 | 108 | 526 | 152 | 113 | 04985 | 19883 |
| 3202906 | 062 | 094 | 536 | 156 | 130 | 05542 | 13593 |
| 3202907 | 068 | 050 | 560 | 167 | 111 | 07283 | 10645 |
| 3202908 | 096 | 040 | 456 | 163 | 143 | 10398 | 08952 |
| 3202909 | 064 | 056 | 904 | 174 | 124 | 06677 | 06501 |
| 3202910 | 064 | 078 | 432 | 159 | 145 | 04550 | 10300 |
| 3202911 | 066 | 074 | 534 | 178 | 105 | 06225 | 11650 |
| 3202912 | 064 | 094 | 460 | 149 | 108 | 05916 | 16923 |
| 3202913 | 060 | 096 | 494 | 139 | 110 | 08208 | 14947 |
| 3202914 | 058 | 094 | 492 | 149 | 101 | 06395 | 15086 |
| 3202915 | 030 | 126 | 630 | 144 | 116 | 06723 | 22910 |
| 3202916 | 060 | 100 | 550 | 157 | 133 | 08041 | 17330 |
| 3202917 | 064 | 100 | 544 | 138 | 101 | 05846 | 16124 |
| 3202918 | 058 | 100 | 440 | 144 | 109 | 05375 | 18526 |
| 3202919 | 080 | 076 | 570 | 174 | 124 | 09627 | 09985 |
| 3202920 | 030 | 128 | 520 | 145 | 110 | 04972 | 15795 |
| 3402901 | 086 | 068 | 628 | 284 | 232 | 07765 | 12083 |
| 3402902 | 084 | 098 | 690 | 277 | 244 | 10635 | 15030 |
| 3402903 | 078 | 112 | 614 | 248 | 222 | 10052 | 15319 |
| 3402904 | 086 | 108 | 450 | 264 | 237 | 09603 | 13612 |
| 3402905 | 070 | 106 | 620 | 267 | 232 | 06908 | 18417 |
| 3402906 | 062 | 142 | 614 | 248 | 222 | 05254 | 20144 |
| 3402907 | 078 | 096 | 632 | 271 | 215 | 08457 | 15150 |
| 3402908 | 080 | 100 | 732 | 249 | 217 | 08787 | 15579 |
| 3402909 | 074 | 100 | 578 | 282 | 235 | 07798 | 13964 |
| 3402910 | 076 | 102 | 552 | 263 | 228 | 08355 | 17053 |
| 3402911 | 092 | 096 | 622 | 278 | 226 | 08947 | 13729 |
| 3402912 | 078 | 146 | 606 | 253 | 240 | 05284 | 21329 |
| 3402913 | 078 | 098 | 642 | 252 | 219 | 09500 | 12835 |
| 3402914 | 078 | 108 | 676 | 266 | 231 | 08512 | 16603 |
| 3402915 | 068 | 132 | 588 | 250 | 219 | 07372 | 20689 |
| 3402916 | 068 | 112 | 652 | 248 | 225 | 05532 | 18167 |
| 3402917 | 086 | 104 | 718 | 267 | 240 | 07206 | 15195 |
| 3402918 | 064 | 090 | 652 | 284 | 237 | 07144 | 11439 |
| 3402919 | 106 | 042 | 868 | 293 | 235 | 16082 | 05128 |
| 3402920 | 098 | 072 | 630 | 260 | 232 | 13376 | 13449 |

| | | | | | | | |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 3103001 | 076 | 072 | 704 | 083 | 059 | 06515 | 05655 |
| 3103002 | 066 | 070 | 734 | 102 | 063 | 08116 | 05131 |
| 3103003 | 050 | 106 | 770 | 079 | 068 | 02855 | 10544 |
| 3103004 | 068 | 076 | 546 | 088 | 063 | 06351 | 05920 |
| 3103005 | 080 | 330 | 970 | 058 | 067 | 03410 | 17337 |
| 3103006 | 064 | 080 | 778 | 084 | 063 | 02995 | 09724 |
| 3103007 | 040 | 120 | 672 | 074 | 066 | 01019 | 10631 |
| 3103008 | 072 | 066 | 768 | 094 | 067 | 06946 | 04329 |
| 3103009 | 056 | 074 | 604 | 091 | 065 | 04821 | 07723 |
| 3103010 | 058 | 072 | 996 | 101 | 066 | 06912 | 07008 |
| 3103011 | 042 | 090 | 576 | 077 | 068 | 02020 | 07697 |
| 3103012 | 064 | 080 | 688 | 083 | 061 | 01980 | 11362 |
| 3103013 | 070 | 070 | 556 | 092 | 069 | 05450 | 06372 |
| 3103014 | 056 | 046 | 732 | 091 | 063 | 04173 | 03570 |
| 3103015 | 070 | 118 | 576 | 075 | 062 | 02686 | 10123 |
| 3103016 | 058 | 046 | 640 | 088 | 063 | 05770 | 03144 |
| 3103017 | 058 | 086 | 526 | 087 | 078 | 03055 | 10061 |
| 3103018 | 056 | 068 | 996 | 086 | 061 | 04360 | 05414 |
| 3103019 | 030 | 084 | 578 | 076 | 053 | 00908 | 09524 |
| 3103020 | 068 | 102 | 630 | 074 | 063 | 05757 | 13665 |
| 3203001 | 048 | 082 | 418 | 147 | 144 | 04496 | 08479 |
| 3203002 | 062 | 038 | 364 | 114 | 139 | 07077 | 01379 |
| 3203003 | 036 | 034 | 294 | 113 | 135 | 03386 | 01764 |
| 3203004 | 054 | 128 | 468 | 140 | 130 | 02483 | 12402 |
| 3203005 | 050 | 106 | 384 | 147 | 135 | 04124 | 13748 |
| 3203006 | 062 | 082 | 412 | 154 | 149 | 05840 | 07660 |
| 3203007 | 048 | 124 | 472 | 150 | 136 | 04442 | 12567 |
| 3203008 | 048 | 084 | 344 | 145 | 145 | 04194 | 06051 |
| 3203009 | 048 | 116 | 560 | 137 | 128 | 03052 | 14493 |
| 3203010 | 062 | 102 | 436 | 148 | 127 | 04465 | 10559 |
| 3203011 | 040 | 082 | 902 | 151 | 148 | 03387 | 07207 |
| 3203012 | 054 | 066 | 528 | 156 | 131 | 04974 | 07239 |
| 3203013 | 052 | 104 | 530 | 153 | 136 | 04588 | 11806 |
| 3203014 | 054 | 082 | 530 | 151 | 118 | 04589 | 12123 |
| 3203015 | 052 | 106 | 514 | 154 | 123 | 04686 | 13212 |
| 3203016 | 050 | 096 | 958 | 158 | 123 | 04487 | 12275 |
| 3203017 | 056 | 074 | 936 | 143 | 125 | 05071 | 08425 |
| 3203018 | 050 | 078 | 522 | 155 | 130 | 04815 | 10119 |
| 3203019 | 058 | 074 | 412 | 147 | 128 | 05194 | 10088 |
| 3203020 | 048 | 104 | 486 | 147 | 116 | 04325 | 12472 |
| 3403001 | 082 | 030 | 362 | 198 | 242 | 07369 | 02220 |
| 3403002 | 060 | 206 | 562 | 243 | 240 | 05892 | 18258 |
| 3403003 | 082 | 122 | 664 | 252 | 259 | 05838 | 12404 |
| 3403004 | 086 | 106 | 732 | 273 | 251 | 06128 | 12171 |
| 3403005 | 072 | 102 | 996 | 266 | 242 | 07159 | 10423 |
| 3403006 | 080 | 112 | 624 | 265 | 238 | 06896 | 12239 |
| 3403007 | 136 | 130 | 562 | 269 | 261 | 06367 | 15043 |
| 3403008 | 084 | 060 | 498 | 248 | 263 | 04906 | 08492 |
| 3403009 | 078 | 144 | 606 | 263 | 256 | 03987 | 17969 |
| 3403010 | 084 | 078 | 374 | 271 | 271 | 08290 | 08488 |
| 3403011 | 076 | 042 | 342 | 243 | 264 | 07896 | 05683 |
| 3403012 | 074 | 104 | 376 | 264 | 259 | 05990 | 15455 |
| 3403013 | 088 | 098 | 578 | 271 | 256 | 10938 | 10148 |
| 3403014 | 084 | 096 | 846 | 256 | 246 | 06725 | 11208 |
| 3403015 | 082 | 150 | 528 | 265 | 251 | 07342 | 13667 |
| 3403016 | 080 | 092 | 458 | 254 | 255 | 07464 | 10123 |
| 3403017 | 062 | 117 | 880 | 259 | 241 | 05793 | 13544 |
| 3403018 | 064 | 128 | 456 | 254 | 249 | 04583 | 14942 |
| 3403019 | 060 | 116 | 680 | 264 | 244 | 06706 | 10497 |
| 3403020 | 060 | 116 | 680 | 264 | 244 | 06706 | 10497 |

EXPERIMENT 2

110101 400 062 066 564 078 064 03375 07154
 110102 434 068 056 618 100 066 06761 06630
 110103 292 056 072 476 101 063 03960 11274
 110104 338 046 088 494 079 064 02945 11231
 110105 408 068 066 602 088 059 06033 06051
 110106 432 066 064 742 101 057 05714 06737
 110107 504 078 078 824 098 061 07043 08607
 110108 448 066 060 624 108 078 06442 10584
 110109 448 054 088 640 085 064 02799 08143
 110110 388 056 098 566 078 064 05732 14376
 110111 438 052 090 610 096 077 03805 08198
 110112 392 082 088 596 102 082 06974 10008
 110113 426 064 090 604 079 069 03369 06692
 110114 440 068 116 644 086 081 06307 16167
 110115 528 064 350 942 060 060 05226 42810
 110116 518 062 074 704 108 073 05191 08696
 110117 564 056 098 744 085 070 02737 10727
 110118 436 032 030 522 023 068 02407 03279
 110119 484 030 030 564 027 064 01297 03120
 110120 542 068 064 722 092 055 03662 09701
 110201 488 052 078 642 074 058 04057 09567
 110202 530 056 064 862 084 067 07046 03802
 110203 438 058 100 616 068 061 02767 10952
 110204 464 098 096 686 086 071 07646 10813
 110205 586 076 068 778 099 072 08170 04570
 110206 512 070 066 876 090 058 06096 05862
 110207 490 058 078 778 081 050 04721 06923
 110208 642 060 060 820 085 058 04538 06194
 110209 600 074 066 784 086 061 08240 04264
 110210 610 066 060 786 095 071 07312 04428
 110211 656 034 102 812 073 060 00981 08545
 110212 726 074 086 906 086 073 05733 07122
 110213 604 066 050 786 079 053 07350 04199
 110214 528 066 070 684 092 087 06736 06253
 110215 584 054 080 740 071 062 02982 08590
 110216 804 070 066 982 098 083 05554 05446
 110217 762 060 098 940 094 081 03756 08960
 110218 492 070 066 678 098 071 06377 05713
 110219 634 068 084 920 107 053 08483 07202
 110220 514 074 062 706 090 061 08036 05037
 110401 168 070 072 356 101 070 05214 06788
 110402 310 062 062 856 100 064 05036 05149
 110403 386 052 130 594 077 063 01939 12500
 110404 222 060 148 450 081 072 05883 14754
 110405 270 058 104 454 087 072 03283 09663
 110406 324 084 322 750 072 072 09966 50299
 110407 250 050 110 432 069 057 02307 13191
 110408 254 068 066 440 112 079 06671 05967
 110409 286 086 050 528 090 059 08367 04420
 110410 390 062 084 586 096 072 06357 05048
 110411 252 066 138 476 060 061 04675 14084
 110412 314 064 066 464 109 100 05408 05289
 110413 206 076 100 410 081 068 06478 11320
 110414 312 062 078 508 085 058 02013 07966
 110415 304 040 032 396 060 087 01698 03220
 110416 338 068 068 532 076 053 03722 05634
 110417 296 060 090 466 092 076 02207 11326
 110418 332 068 086 518 120 090 06024 09938
 110419 378 080 092 586 122 093 08992 12388
 110420 254 036 030 340 048 068 02300 03180

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 120101 | 396 | 070 | 084 | 578 | 122 | 119 | 07732 | 07021 |
| 120102 | 468 | 062 | 174 | 746 | 119 | 119 | 07733 | 19095 |
| 120103 | 372 | 048 | 294 | 996 | 123 | 121 | 07225 | 36363 |
| 120104 | 410 | 060 | 390 | 996 | 134 | 131 | 07783 | 30360 |
| 120105 | 636 | 064 | 054 | 996 | 147 | 124 | 06975 | 05205 |
| 120106 | 458 | 056 | 078 | 592 | 138 | 138 | 05929 | 04785 |
| 120107 | 398 | 068 | 086 | 572 | 149 | 145 | 10133 | 08484 |
| 120108 | 490 | 064 | 038 | 612 | 124 | 145 | 08868 | 04062 |
| 120109 | 466 | 090 | 326 | 882 | 123 | 123 | 11663 | 55659 |
| 120110 | 440 | 076 | 070 | 606 | 159 | 157 | 08769 | 07988 |
| 120111 | 622 | 060 | 110 | 812 | 150 | 135 | 07178 | 14544 |
| 120112 | 488 | 058 | 052 | 810 | 124 | 118 | 04901 | 01944 |
| 120113 | 274 | 068 | 076 | 908 | 151 | 129 | 07277 | 10077 |
| 120114 | 534 | 074 | 388 | 996 | 127 | 127 | 09634 | 37741 |
| 120115 | 462 | 064 | 096 | 642 | 141 | 133 | 06984 | 08901 |
| 120116 | 430 | 058 | 296 | 998 | 131 | 126 | 08557 | 21690 |
| 120117 | 390 | 078 | 220 | 708 | 122 | 122 | 06510 | 21006 |
| 120118 | 474 | 066 | 296 | 856 | 114 | 118 | 06619 | 21541 |
| 120119 | 498 | 048 | 134 | 700 | 123 | 122 | 04815 | 22542 |
| 120120 | 640 | 060 | 124 | 844 | 140 | 130 | 05989 | 11392 |
| 120201 | 296 | 062 | 094 | 486 | 167 | 142 | 08422 | 13390 |
| 120202 | 322 | 088 | 084 | 996 | 174 | 120 | 09499 | 10797 |
| 120203 | 360 | 070 | 090 | 584 | 173 | 141 | 07087 | 10446 |
| 120204 | 342 | 078 | 094 | 648 | 159 | 118 | 07764 | 11754 |
| 120205 | 430 | 070 | 126 | 646 | 144 | 135 | 05877 | 11795 |
| 120206 | 448 | 074 | 106 | 628 | 155 | 155 | 07708 | 14590 |
| 120207 | 332 | 076 | 094 | 618 | 165 | 134 | 06735 | 07626 |
| 120208 | 380 | 058 | 128 | 648 | 158 | 126 | 05173 | 12137 |
| 120209 | 374 | 050 | 044 | 488 | 123 | 153 | 05052 | 04117 |
| 120210 | 300 | 074 | 364 | 758 | 123 | 122 | 05892 | 32114 |
| 120211 | 284 | 046 | 388 | 996 | 111 | 118 | 05386 | 73324 |
| 120212 | 338 | 034 | 182 | 572 | 127 | 121 | 03754 | 16733 |
| 120213 | 226 | 078 | 382 | 998 | 126 | 122 | 06493 | 70433 |
| 120214 | 362 | 082 | 374 | 996 | 117 | 117 | 07613 | 40490 |
| 120215 | 386 | 082 | 092 | 928 | 177 | 128 | 09646 | 11403 |
| 120216 | 392 | 074 | 138 | 624 | 162 | 149 | 05620 | 11980 |
| 120217 | 378 | 078 | 370 | 996 | 126 | 120 | 05257 | 40229 |
| 120218 | 350 | 070 | 134 | 576 | 149 | 139 | 04636 | 13973 |
| 120219 | 358 | 058 | 090 | 996 | 189 | 123 | 10276 | 07905 |
| 120220 | 312 | 076 | 102 | 568 | 183 | 142 | 07156 | 11924 |
| 120401 | 462 | 060 | 204 | 770 | 148 | 140 | 09296 | 21227 |
| 120402 | 208 | 040 | 100 | 404 | 142 | 132 | 04567 | 06628 |
| 120403 | 340 | 058 | 182 | 600 | 102 | 101 | 06371 | 21531 |
| 120404 | 428 | 072 | 266 | 766 | 128 | 128 | 09131 | 29182 |
| 120405 | 418 | 072 | 074 | 608 | 144 | 131 | 06475 | 09858 |
| 120406 | 270 | 060 | 470 | 820 | 130 | 130 | 05836 | 42568 |
| 120407 | 302 | 056 | 206 | 584 | 122 | 127 | 05585 | 19363 |
| 120408 | 244 | 074 | 074 | 418 | 163 | 158 | 07310 | 08290 |
| 120409 | 340 | 070 | 056 | 486 | 138 | 136 | 05899 | 08542 |
| 120410 | 420 | 068 | 080 | 590 | 142 | 137 | 08119 | 11114 |
| 120411 | 316 | 066 | 088 | 490 | 147 | 138 | 07090 | 13317 |
| 120412 | 270 | 080 | 078 | 580 | 151 | 123 | 09135 | 09547 |
| 120413 | 360 | 068 | 304 | 996 | 121 | 125 | 08036 | 39915 |
| 120414 | 326 | 074 | 074 | 494 | 151 | 140 | 08200 | 10932 |
| 120415 | 250 | 070 | 078 | 418 | 140 | 131 | 07086 | 12542 |
| 120416 | 334 | 070 | 072 | 496 | 148 | 142 | 10474 | 08240 |
| 120417 | 268 | 070 | 068 | 426 | 146 | 140 | 07539 | 07729 |
| 120418 | 290 | 076 | 100 | 840 | 157 | 125 | 08578 | 10003 |
| 120419 | 306 | 072 | 128 | 526 | 138 | 133 | 07144 | 24997 |
| 120420 | 328 | 058 | 418 | 996 | 128 | 126 | 08162 | 39341 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 140101 | 436 | 068 | 110 | 918 | 252 | 246 | 09110 | 14486 |
| 140102 | 536 | 090 | 130 | 778 | 250 | 246 | 10861 | 18046 |
| 140103 | 466 | 086 | 104 | 720 | 266 | 259 | 08911 | 12501 |
| 140104 | 384 | 076 | 080 | 999 | 263 | 215 | 12096 | 12177 |
| 140105 | 532 | 076 | 108 | 742 | 258 | 255 | 08878 | 14619 |
| 140106 | 524 | 086 | 086 | 716 | 270 | 264 | 08985 | 11937 |
| 140107 | 542 | 096 | 074 | 740 | 274 | 274 | 13292 | 10757 |
| 140108 | 456 | 068 | 112 | 658 | 260 | 260 | 09213 | 12417 |
| 140109 | 536 | 076 | 094 | 798 | 277 | 253 | 10761 | 11691 |
| 140110 | 552 | 094 | 112 | 778 | 272 | 263 | 09743 | 18089 |
| 140111 | 544 | 084 | 096 | 758 | 259 | 254 | 09175 | 14460 |
| 140112 | 674 | 068 | 130 | 904 | 272 | 240 | 09234 | 16564 |
| 140113 | 428 | 090 | 096 | 718 | 273 | 252 | 11489 | 12966 |
| 140114 | 426 | 076 | 032 | 554 | 182 | 230 | 09714 | 01172 |
| 140115 | 480 | 084 | 290 | 884 | 255 | 255 | 12705 | 47778 |
| 140116 | 462 | 072 | 030 | 584 | 169 | 221 | 07090 | 03350 |
| 140117 | 524 | 082 | 044 | 670 | 215 | 242 | 11509 | 03152 |
| 140118 | 338 | 090 | 066 | 514 | 245 | 246 | 09273 | 13945 |
| 140119 | 294 | 086 | 090 | 500 | 261 | 263 | 10552 | 13442 |
| 140120 | 452 | 082 | 102 | 780 | 259 | 245 | 08827 | 16299 |
| 140201 | 296 | 086 | 424 | 996 | 245 | 243 | 11555 | 37670 |
| 140202 | 386 | 074 | 030 | 510 | 154 | 212 | 12418 | 00210 |
| 140203 | 318 | 074 | 030 | 442 | 190 | 256 | 08970 | 01645 |
| 140204 | 270 | 076 | 128 | 900 | 265 | 252 | 08380 | 16949 |
| 140205 | 216 | 062 | 052 | 350 | 237 | 271 | 06988 | 05048 |
| 140206 | 236 | 076 | 042 | 374 | 219 | 267 | 10384 | 06049 |
| 140207 | 258 | 076 | 030 | 384 | 210 | 253 | 08070 | 00276 |
| 140208 | 264 | 094 | 128 | 626 | 277 | 233 | 08601 | 14425 |
| 140209 | 302 | 078 | 250 | 650 | 246 | 249 | 08471 | 45248 |
| 140210 | 346 | 092 | 082 | 996 | 295 | 249 | 14460 | 09791 |
| 140211 | 300 | 100 | 372 | 792 | 248 | 247 | 13837 | 39767 |
| 140212 | 276 | 090 | 484 | 872 | 247 | 247 | 10874 | 51502 |
| 140213 | 216 | 088 | 046 | 728 | 263 | 241 | 10159 | 05883 |
| 140214 | 156 | 088 | 122 | 396 | 292 | 267 | 13949 | 22941 |
| 140215 | 344 | 084 | 030 | 478 | 200 | 250 | 13194 | 03496 |
| 140216 | 306 | 082 | 078 | 486 | 297 | 295 | 14124 | 13036 |
| 140217 | 262 | 090 | 090 | 516 | 290 | 277 | 11636 | 10480 |
| 140218 | 192 | 104 | 030 | 346 | 268 | 244 | 13821 | 02010 |
| 140219 | 224 | 088 | 030 | 362 | 205 | 244 | 07782 | 03523 |
| 140220 | 258 | 084 | 122 | 490 | 281 | 270 | 09031 | 17932 |
| 140401 | 382 | 084 | 104 | 946 | 309 | 244 | 08975 | 17559 |
| 140402 | 304 | 076 | 030 | 430 | 206 | 256 | 09554 | 03159 |
| 140403 | 288 | 076 | 146 | 530 | 243 | 233 | 09482 | 32802 |
| 140404 | 302 | 080 | 140 | 542 | 282 | 272 | 09553 | 28028 |
| 140405 | 390 | 084 | 042 | 536 | 208 | 242 | 08096 | 04221 |
| 140406 | 208 | 088 | 120 | 416 | 263 | 263 | 09056 | 13530 |
| 140407 | 270 | 082 | 130 | 526 | 282 | 260 | 08844 | 16166 |
| 140408 | 240 | 084 | 036 | 380 | 233 | 272 | 07441 | 04465 |
| 140409 | 244 | 088 | 130 | 610 | 293 | 246 | 08918 | 18426 |
| 140410 | 426 | 068 | 150 | 678 | 279 | 259 | 06927 | 24105 |
| 140411 | 282 | 090 | 122 | 516 | 245 | 238 | 06669 | 14469 |
| 140412 | 350 | 078 | 368 | 996 | 255 | 244 | 10187 | 49458 |
| 140413 | 378 | 094 | 102 | 998 | 259 | 245 | 11471 | 12316 |
| 140414 | 298 | 076 | 140 | 580 | 254 | 236 | 09347 | 27928 |
| 140415 | 234 | 096 | 116 | 488 | 273 | 253 | 10266 | 17401 |
| 140416 | 398 | 086 | 136 | 638 | 291 | 276 | 09901 | 21391 |
| 140417 | 400 | 094 | 030 | 944 | 220 | 240 | 11614 | 01640 |
| 140418 | 288 | 078 | 284 | 998 | 248 | 246 | 08806 | 38572 |
| 140419 | 292 | 090 | 032 | 434 | 209 | 255 | 09918 | 03305 |
| 140420 | 446 | 070 | 124 | 672 | 286 | 276 | 09031 | 15847 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 210101 | 256 | 050 | 126 | 452 | 066 | 058 | 01832 | 08229 |
| 210102 | 264 | 044 | 100 | 466 | 076 | 051 | 02012 | 05962 |
| 210103 | 426 | 056 | 086 | 614 | 089 | 056 | 03534 | 08809 |
| 210104 | 078 | 034 | 112 | 244 | 073 | 073 | 01993 | 03989 |
| 210105 | 206 | 058 | 096 | 420 | 085 | 064 | 03078 | 04544 |
| 210106 | 166 | 060 | 094 | 366 | 073 | 049 | 03133 | 06224 |
| 210107 | 240 | 030 | 036 | 326 | 061 | 070 | 00495 | 02285 |
| 210108 | 224 | 048 | 032 | 314 | 066 | 081 | 01493 | 02007 |
| 210109 | 194 | 048 | 122 | 400 | 072 | 059 | 02132 | 07530 |
| 210110 | 358 | 030 | 050 | 438 | 059 | 059 | 00554 | 01598 |
| 210111 | 158 | 064 | 112 | 362 | 069 | 058 | 02617 | 06703 |
| 210112 | 270 | 060 | 106 | 458 | 073 | 062 | 02694 | 08374 |
| 210113 | 172 | 032 | 070 | 326 | 061 | 050 | 00587 | 04623 |
| 210114 | 116 | 040 | 112 | 288 | 064 | 057 | 01977 | 08692 |
| 210115 | 236 | 066 | 104 | 430 | 073 | 060 | 02957 | 08726 |
| 210116 | 180 | 052 | 104 | 366 | 074 | 061 | 02727 | 07564 |
| 210117 | 184 | 068 | 078 | 382 | 085 | 064 | 03185 | 04578 |
| 210118 | 314 | 030 | 092 | 482 | 063 | 056 | 00690 | 06531 |
| 210119 | 102 | 054 | 046 | 222 | 066 | 072 | 03034 | 02034 |
| 210120 | 218 | 032 | 070 | 320 | 044 | 059 | 00894 | 03387 |
| 210201 | 288 | 030 | 058 | 396 | 056 | 056 | 00457 | 04062 |
| 210202 | 312 | 320 | 030 | 682 | 060 | 082 | 08213 | 02286 |
| 210203 | 070 | 154 | 036 | 280 | 070 | 078 | 05270 | 01408 |
| 210204 | 224 | 054 | 030 | 328 | 052 | 069 | 01987 | 01601 |
| 210205 | 218 | 030 | 046 | 314 | 053 | 051 | 00111 | 01678 |
| 210206 | 206 | 054 | 030 | 310 | 048 | 066 | 03586 | 00621 |
| 210207 | 106 | 046 | 068 | 240 | 067 | 061 | 02078 | 05025 |
| 210208 | 176 | 056 | 036 | 288 | 062 | 068 | 03526 | 00637 |
| 210209 | 262 | 030 | 038 | 350 | 064 | 065 | 00161 | 02929 |
| 210210 | 148 | 030 | 050 | 248 | 067 | 061 | 00285 | 04836 |
| 210211 | 174 | 030 | 140 | 386 | 053 | 058 | 00499 | 03160 |
| 210212 | 228 | 030 | 054 | 740 | 060 | 047 | 00571 | 01447 |
| 210213 | 208 | 030 | 036 | 294 | 049 | 059 | 00529 | 02257 |
| 210214 | 432 | 064 | 036 | 554 | 059 | 066 | 02937 | 03457 |
| 210215 | 070 | 144 | 036 | 290 | 060 | 068 | 05277 | 01528 |
| 210216 | 234 | 065 | 040 | 348 | 056 | 065 | 01869 | 01203 |
| 210217 | 219 | 036 | 052 | 316 | 056 | 058 | 00111 | 01539 |
| 210218 | 106 | 045 | 059 | 258 | 069 | 060 | 02048 | 04923 |
| 210219 | 186 | 066 | 046 | 299 | 062 | 066 | 03546 | 01056 |
| 210220 | 149 | 036 | 060 | 242 | 062 | 061 | 01228 | 03436 |
| 210401 | 124 | 032 | 030 | 226 | 066 | 045 | 00835 | 00926 |
| 210402 | 108 | 078 | 032 | 238 | 051 | 064 | 01227 | 00196 |
| 210403 | 094 | 110 | 094 | 318 | 086 | 065 | 05781 | 05435 |
| 210404 | 226 | 138 | 122 | 818 | 072 | 052 | 04391 | 03026 |
| 210405 | 128 | 130 | 244 | 438 | 055 | 049 | 00210 | 08879 |
| 210406 | 112 | 068 | 034 | 234 | 073 | 085 | 03688 | 00871 |
| 210407 | 128 | 120 | 060 | 328 | 058 | 066 | 03181 | 01021 |
| 210408 | 156 | 030 | 064 | 270 | 032 | 059 | 00260 | 00300 |
| 210409 | 070 | 082 | 250 | 500 | 049 | 049 | 01983 | 14040 |
| 210410 | 112 | 104 | 052 | 288 | 059 | 068 | 02145 | 01340 |
| 210411 | 100 | 038 | 052 | 210 | 059 | 074 | 01665 | 02042 |
| 210412 | 070 | 100 | 048 | 724 | 052 | 056 | 04568 | 00970 |
| 210413 | 128 | 090 | 036 | 274 | 047 | 056 | 02578 | 00909 |
| 210414 | 096 | 036 | 064 | 216 | 032 | 042 | 00152 | 02780 |
| 210415 | 104 | 094 | 176 | 394 | 059 | 053 | 04118 | 08868 |
| 210416 | 094 | 030 | 150 | 294 | 052 | 060 | 00513 | 07218 |
| 210417 | 102 | 142 | 164 | 756 | 051 | 054 | 05279 | 02535 |
| 210418 | 226 | 138 | 122 | 818 | 072 | 052 | 04391 | 03026 |
| 210419 | 115 | 059 | 040 | 245 | 063 | 065 | 03221 | 01897 |
| 210420 | 156 | 060 | 065 | 290 | 062 | 064 | 01260 | 01230 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 220101 | 550 | 068 | 372 | 990 | 116 | 116 | 06975 | 71230 |
| 220102 | 134 | 062 | 040 | 256 | 128 | 145 | 06994 | 02878 |
| 220103 | 218 | 090 | 040 | 368 | 130 | 137 | 09332 | 01672 |
| 220104 | 228 | 080 | 088 | 528 | 151 | 114 | 06934 | 08845 |
| 220105 | 228 | 080 | 034 | 362 | 099 | 119 | 02608 | 01250 |
| 220106 | 376 | 086 | 030 | 512 | 098 | 125 | 05309 | 01288 |
| 220107 | 108 | 056 | 080 | 486 | 121 | 123 | 04905 | 05766 |
| 220108 | 126 | 070 | 086 | 302 | 140 | 129 | 04474 | 08204 |
| 220109 | 346 | 060 | 094 | 520 | 130 | 126 | 04952 | 08777 |
| 220110 | 344 | 082 | 034 | 480 | 092 | 116 | 02007 | 01670 |
| 220111 | 292 | 054 | 032 | 398 | 084 | 106 | 02509 | 01836 |
| 220112 | 132 | 068 | 362 | 582 | 115 | 119 | 03335 | 16639 |
| 220113 | 390 | 072 | 074 | 556 | 145 | 142 | 05224 | 07048 |
| 220114 | 120 | 056 | 092 | 288 | 133 | 128 | 03267 | 07832 |
| 220115 | 408 | 062 | 030 | 520 | 093 | 116 | 05143 | 00575 |
| 220116 | 274 | 056 | 114 | 510 | 130 | 106 | 02547 | 09539 |
| 220117 | 338 | 054 | 096 | 508 | 125 | 125 | 02109 | 11383 |
| 220118 | 364 | 060 | 424 | 874 | 119 | 120 | 04365 | 32917 |
| 220119 | 162 | 206 | 040 | 438 | 137 | 147 | 08736 | 04188 |
| 220120 | 126 | 060 | 080 | 318 | 134 | 115 | 05296 | 04794 |
| 220201 | 234 | 078 | 110 | 660 | 131 | 123 | 03595 | 08820 |
| 220202 | 138 | 060 | 168 | 432 | 123 | 117 | 02386 | 08398 |
| 220203 | 204 | 060 | 086 | 370 | 138 | 130 | 04090 | 07297 |
| 220204 | 200 | 074 | 106 | 422 | 131 | 114 | 04487 | 08718 |
| 220205 | 114 | 064 | 040 | 396 | 139 | 130 | 02047 | 09013 |
| 220206 | 234 | 034 | 140 | 688 | 128 | 104 | 00719 | 06978 |
| 220207 | 124 | 048 | 032 | 224 | 099 | 128 | 03773 | 00427 |
| 220208 | 256 | 076 | 116 | 518 | 139 | 123 | 03623 | 08904 |
| 220209 | 156 | 068 | 072 | 342 | 137 | 131 | 05869 | 04669 |
| 220210 | 076 | 114 | 074 | 372 | 146 | 121 | 06575 | 05266 |
| 220211 | 180 | 058 | 030 | 288 | 092 | 122 | 03459 | 00574 |
| 220212 | 192 | 066 | 064 | 342 | 112 | 123 | 03519 | 03143 |
| 220213 | 146 | 060 | 030 | 256 | 071 | 092 | 02404 | 00736 |
| 220214 | 218 | 094 | 094 | 406 | 137 | 137 | 04253 | 09246 |
| 220215 | 136 | 066 | 098 | 359 | 139 | 117 | 02234 | 09057 |
| 220216 | 130 | 070 | 134 | 356 | 139 | 131 | 04824 | 10025 |
| 220217 | 176 | 052 | 094 | 368 | 140 | 129 | 04197 | 07418 |
| 220218 | 232 | 030 | 118 | 416 | 126 | 120 | 00523 | 07067 |
| 220219 | 296 | 056 | 088 | 460 | 153 | 146 | 04143 | 10445 |
| 220220 | 368 | 030 | 080 | 498 | 104 | 101 | 00903 | 06217 |
| 220401 | 334 | 030 | 074 | 458 | 123 | 118 | 01103 | 08967 |
| 220402 | 232 | 078 | 072 | 382 | 128 | 128 | 04515 | 05295 |
| 220403 | 344 | 030 | 058 | 452 | 096 | 101 | 00866 | 04089 |
| 220404 | 474 | 062 | 072 | 608 | 128 | 128 | 05473 | 05019 |
| 220405 | 274 | 030 | 080 | 404 | 109 | 102 | 00862 | 07301 |
| 220406 | 336 | 030 | 078 | 464 | 108 | 104 | 00497 | 06688 |
| 220407 | 380 | 054 | 084 | 538 | 132 | 126 | 03535 | 07733 |
| 220408 | 238 | 030 | 072 | 340 | 095 | 095 | 00814 | 04003 |
| 220409 | 096 | 058 | 088 | 262 | 131 | 123 | 04431 | 07310 |
| 220410 | 252 | 060 | 082 | 828 | 135 | 108 | 04136 | 09404 |
| 220411 | 270 | 076 | 074 | 964 | 129 | 114 | 04637 | 06069 |
| 220412 | 258 | 050 | 092 | 420 | 122 | 117 | 02791 | 08846 |
| 220413 | 224 | 058 | 038 | 340 | 089 | 120 | 01062 | 02365 |
| 220414 | 458 | 086 | 068 | 612 | 125 | 125 | 06586 | 04340 |
| 220415 | 252 | 078 | 082 | 538 | 117 | 118 | 08713 | 03687 |
| 220416 | 250 | 068 | 096 | 560 | 128 | 102 | 04406 | 08746 |
| 220417 | 296 | 030 | 074 | 400 | 103 | 103 | 00651 | 06177 |
| 220418 | 216 | 076 | 108 | 428 | 126 | 113 | 04112 | 07740 |
| 220419 | 456 | 030 | 072 | 578 | 103 | 100 | 00326 | 06476 |
| 220420 | 332 | 072 | 060 | 464 | 122 | 122 | 06093 | 03533 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 240101 | 106 | 098 | 098 | 322 | 234 | 244 | 04076 | 06172 |
| 240102 | 284 | 124 | 176 | 660 | 241 | 241 | 05464 | 10704 |
| 240103 | 086 | 088 | 044 | 238 | 194 | 225 | 06642 | 02025 |
| 240104 | 280 | 086 | 154 | 578 | 264 | 242 | 06021 | 10349 |
| 240105 | 144 | 088 | 148 | 428 | 259 | 243 | 06838 | 09369 |
| 240106 | 550 | 078 | 180 | 844 | 244 | 234 | 03250 | 13777 |
| 240107 | 210 | 104 | 136 | 526 | 235 | 237 | 03759 | 05569 |
| 240108 | 366 | 098 | 104 | 570 | 226 | 224 | 04707 | 08213 |
| 240109 | 100 | 038 | 058 | 216 | 143 | 187 | 03704 | 00584 |
| 240110 | 264 | 082 | 138 | 632 | 243 | 240 | 05793 | 14577 |
| 240111 | 442 | 074 | 070 | 606 | 228 | 234 | 05996 | 06984 |
| 240112 | 182 | 060 | 146 | 432 | 249 | 238 | 04561 | 12731 |
| 240113 | 328 | 076 | 044 | 468 | 198 | 226 | 05737 | 02724 |
| 240114 | 096 | 094 | 208 | 418 | 229 | 232 | 02728 | 11775 |
| 240115 | 130 | 064 | 038 | 252 | 171 | 210 | 05093 | 03304 |
| 240116 | 156 | 102 | 046 | 324 | 165 | 194 | 03864 | 03390 |
| 240117 | 476 | 066 | 148 | 710 | 240 | 240 | 04888 | 13191 |
| 240118 | 468 | 064 | 092 | 644 | 251 | 248 | 05654 | 10995 |
| 240119 | 220 | 072 | 036 | 348 | 144 | 185 | 04361 | 01091 |
| 240120 | 246 | 080 | 046 | 392 | 152 | 196 | 05250 | 00522 |
| 240201 | 286 | 076 | 036 | 418 | 184 | 217 | 06865 | 01154 |
| 240202 | 096 | 072 | 044 | 232 | 176 | 214 | 03266 | 01801 |
| 240203 | 078 | 080 | 346 | 594 | 233 | 232 | 02121 | 17646 |
| 240204 | 070 | 064 | 204 | 412 | 251 | 251 | 05429 | 20349 |
| 240205 | 074 | 118 | 170 | 472 | 265 | 250 | 10061 | 11636 |
| 240206 | 070 | 094 | 036 | 220 | 181 | 211 | 06429 | 05752 |
| 240207 | 086 | 076 | 030 | 212 | 158 | 192 | 06408 | 02555 |
| 240208 | 128 | 030 | 032 | 210 | 136 | 177 | 00246 | 02092 |
| 240209 | 150 | 034 | 052 | 256 | 150 | 171 | 01574 | 02850 |
| 240210 | 108 | 030 | 592 | 750 | 196 | 184 | 00392 | 22426 |
| 240211 | 084 | 090 | 118 | 418 | 255 | 246 | 04934 | 09232 |
| 240212 | 114 | 054 | 030 | 218 | 162 | 191 | 02713 | 01293 |
| 240213 | 078 | 058 | 278 | 430 | 202 | 208 | 03572 | 17347 |
| 240214 | 072 | 076 | 052 | 220 | 164 | 196 | 01555 | 00874 |
| 240215 | 132 | 054 | 030 | 236 | 152 | 178 | 01383 | 00426 |
| 240216 | 086 | 036 | 084 | 226 | 203 | 208 | 00898 | 10093 |
| 240217 | 078 | 080 | 346 | 594 | 233 | 232 | 02121 | 17646 |
| 240218 | 090 | 084 | 224 | 452 | 251 | 240 | 05263 | 18632 |
| 240219 | 096 | 066 | 108 | 306 | 240 | 235 | 06258 | 12036 |
| 240220 | 128 | 088 | 128 | 458 | 256 | 242 | 05698 | 10022 |
| 240401 | 508 | 062 | 108 | 810 | 269 | 221 | 07711 | 19889 |
| 240402 | 350 | 084 | 110 | 564 | 303 | 281 | 07644 | 17693 |
| 240403 | 388 | 082 | 096 | 686 | 298 | 246 | 08501 | 16242 |
| 240404 | 316 | 086 | 098 | 520 | 287 | 272 | 06146 | 19624 |
| 240405 | 356 | 090 | 106 | 592 | 297 | 248 | 09436 | 16319 |
| 240406 | 428 | 088 | 098 | 630 | 292 | 272 | 07691 | 15165 |
| 240407 | 352 | 084 | 122 | 588 | 286 | 248 | 08140 | 20996 |
| 240408 | 454 | 082 | 102 | 768 | 300 | 225 | 08494 | 18524 |
| 240409 | 424 | 082 | 100 | 770 | 289 | 252 | 10680 | 12839 |
| 240410 | 394 | 080 | 114 | 632 | 289 | 245 | 06963 | 17040 |
| 240411 | 422 | 080 | 114 | 750 | 293 | 236 | 09802 | 17032 |
| 240412 | 334 | 072 | 172 | 600 | 237 | 229 | 07242 | 25937 |
| 240413 | 348 | 070 | 128 | 662 | 297 | 219 | 06225 | 19716 |
| 240414 | 306 | 080 | 112 | 646 | 289 | 233 | 09116 | 14494 |
| 240415 | 346 | 068 | 152 | 682 | 262 | 214 | 05323 | 16037 |
| 240416 | 404 | 056 | 148 | 640 | 257 | 229 | 03718 | 18115 |
| 240417 | 400 | 090 | 446 | 936 | 247 | 247 | 07592 | 85466 |
| 240418 | 462 | 092 | 180 | 756 | 238 | 226 | 07250 | 32376 |
| 240419 | 542 | 052 | 182 | 796 | 176 | 176 | 03557 | 32785 |
| 240420 | 522 | 052 | 124 | 718 | 278 | 260 | 04941 | 15466 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 310101 | 126 | 074 | 034 | 254 | 053 | 063 | 01497 | 01804 |
| 310102 | 100 | 030 | 030 | 180 | 052 | 069 | 00727 | 01399 |
| 310103 | 222 | 034 | 030 | 308 | 050 | 060 | 01272 | 02130 |
| 310104 | 136 | 056 | 070 | 390 | 064 | 057 | 02246 | 03571 |
| 310105 | 136 | 060 | 036 | 252 | 055 | 066 | 01972 | 01891 |
| 310106 | 108 | 078 | 030 | 238 | 054 | 069 | 03120 | 01715 |
| 310107 | 132 | 054 | 034 | 242 | 049 | 063 | 01437 | 01393 |
| 310108 | 098 | 066 | 054 | 270 | 083 | 052 | 04118 | 05422 |
| 310109 | 256 | 030 | 036 | 342 | 041 | 050 | 00830 | 01941 |
| 310110 | 226 | 048 | 030 | 324 | 053 | 069 | 01833 | 01439 |
| 310111 | 152 | 036 | 042 | 250 | 056 | 073 | 00793 | 02943 |
| 310112 | 134 | 054 | 042 | 250 | 060 | 073 | 01461 | 02623 |
| 310113 | 110 | 050 | 030 | 210 | 062 | 073 | 02280 | 01769 |
| 310114 | 146 | 094 | 054 | 314 | 056 | 060 | 01248 | 01926 |
| 310115 | 106 | 048 | 088 | 320 | 058 | 062 | 01542 | 02360 |
| 310116 | 156 | 052 | 094 | 360 | 066 | 062 | 02548 | 03215 |
| 310117 | 160 | 100 | 064 | 358 | 066 | 058 | 01852 | 01685 |
| 310118 | 140 | 030 | 036 | 258 | 068 | 062 | 01624 | 02342 |
| 310119 | 120 | 056 | 048 | 250 | 064 | 058 | 01248 | 01478 |
| 310120 | 258 | 058 | 124 | 458 | 066 | 060 | 02488 | 03214 |
| 310201 | 178 | 054 | 030 | 282 | 074 | 084 | 03109 | 01871 |
| 310202 | 142 | 048 | 056 | 266 | 078 | 079 | 02473 | 05602 |
| 310203 | 132 | 056 | 054 | 318 | 089 | 064 | 04576 | 04148 |
| 310204 | 280 | 038 | 110 | 448 | 080 | 066 | 01114 | 10143 |
| 310205 | 308 | 038 | 094 | 462 | 078 | 061 | 01263 | 12315 |
| 310206 | 110 | 102 | 078 | 334 | 073 | 061 | 02782 | 06446 |
| 310207 | 194 | 030 | 084 | 330 | 072 | 062 | 00590 | 08842 |
| 310208 | 134 | 042 | 084 | 312 | 082 | 054 | 02399 | 08733 |
| 310209 | 248 | 106 | 058 | 490 | 092 | 061 | 07400 | 04409 |
| 310210 | 122 | 042 | 090 | 278 | 084 | 073 | 02449 | 09755 |
| 310211 | 130 | 054 | 052 | 236 | 079 | 079 | 04326 | 03460 |
| 310212 | 352 | 104 | 078 | 576 | 095 | 077 | 06828 | 07624 |
| 310213 | 236 | 048 | 094 | 412 | 101 | 082 | 01559 | 10600 |
| 310214 | 222 | 092 | 064 | 426 | 090 | 067 | 03442 | 06636 |
| 310215 | 148 | 102 | 098 | 370 | 080 | 073 | 03572 | 07441 |
| 310216 | 100 | 112 | 066 | 338 | 085 | 052 | 05625 | 04377 |
| 310217 | 074 | 098 | 080 | 286 | 105 | 083 | 05886 | 08422 |
| 310218 | 142 | 030 | 080 | 292 | 077 | 053 | 01373 | 06359 |
| 310219 | 140 | 052 | 076 | 302 | 093 | 073 | 04438 | 06979 |
| 310220 | 166 | 030 | 062 | 278 | 075 | 069 | 00433 | 07347 |
| 310401 | 140 | 050 | 050 | 260 | 070 | 073 | 02369 | 03181 |
| 310402 | 074 | 052 | 030 | 176 | 057 | 073 | 01702 | 01920 |
| 310403 | 122 | 054 | 034 | 230 | 059 | 069 | 02308 | 01315 |
| 310404 | 158 | 046 | 110 | 334 | 067 | 060 | 01100 | 07363 |
| 310405 | 164 | 030 | 084 | 602 | 064 | 049 | 00835 | 05324 |
| 310406 | 152 | 052 | 030 | 254 | 061 | 075 | 02796 | 01116 |
| 310407 | 090 | 034 | 110 | 266 | 069 | 056 | 01249 | 07608 |
| 310408 | 214 | 050 | 030 | 314 | 068 | 062 | 02967 | 01367 |
| 310409 | 128 | 040 | 054 | 242 | 073 | 076 | 02067 | 03345 |
| 310410 | 136 | 036 | 096 | 302 | 068 | 058 | 01615 | 06350 |
| 310411 | 096 | 046 | 040 | 202 | 056 | 067 | 01589 | 01952 |
| 310412 | 088 | 052 | 132 | 292 | 066 | 056 | 01687 | 07157 |
| 310413 | 106 | 048 | 096 | 294 | 062 | 052 | 01654 | 04945 |
| 310414 | 112 | 038 | 046 | 216 | 060 | 066 | 01521 | 02024 |
| 310415 | 112 | 114 | 038 | 284 | 059 | 071 | 02893 | 00645 |
| 310416 | 090 | 106 | 060 | 276 | 058 | 066 | 03272 | 02687 |
| 310417 | 100 | 114 | 044 | 278 | 053 | 062 | 04990 | 01505 |
| 310418 | 110 | 046 | 092 | 332 | 073 | 051 | 01769 | 05194 |
| 310419 | 156 | 036 | 078 | 290 | 075 | 073 | 01261 | 06528 |
| 310420 | 240 | 030 | 040 | 330 | 066 | 075 | 00216 | 03930 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 320101 | 328 | 072 | 112 | 532 | 145 | 134 | 05123 | 16141 |
| 320102 | 152 | 060 | 118 | 350 | 138 | 124 | 03438 | 16210 |
| 320103 | 138 | 076 | 492 | 726 | 123 | 124 | 06395 | 27980 |
| 320104 | 172 | 106 | 070 | 370 | 150 | 144 | 05847 | 09381 |
| 320105 | 116 | 082 | 056 | 352 | 133 | 122 | 06686 | 04766 |
| 320106 | 198 | 074 | 082 | 374 | 143 | 134 | 03177 | 10945 |
| 320107 | 280 | 066 | 068 | 434 | 143 | 139 | 04654 | 10179 |
| 320108 | 238 | 070 | 058 | 402 | 136 | 125 | 07357 | 07797 |
| 320109 | 200 | 048 | 030 | 298 | 106 | 139 | 02871 | 02034 |
| 320110 | 142 | 046 | 118 | 840 | 129 | 123 | 03326 | 09525 |
| 320111 | 530 | 076 | 058 | 664 | 143 | 143 | 08555 | 08013 |
| 320112 | 130 | 070 | 386 | 920 | 120 | 124 | 04424 | 30119 |
| 320113 | 090 | 064 | 070 | 246 | 124 | 119 | 04860 | 07548 |
| 320114 | 080 | 080 | 086 | 298 | 145 | 123 | 05113 | 12528 |
| 320115 | 148 | 074 | 076 | 390 | 142 | 116 | 04927 | 10397 |
| 320116 | 094 | 056 | 032 | 202 | 096 | 125 | 02965 | 01373 |
| 320117 | 102 | 062 | 032 | 216 | 102 | 132 | 02771 | 02111 |
| 320118 | 292 | 030 | 164 | 506 | 130 | 125 | 01797 | 29252 |
| 320119 | 266 | 034 | 132 | 458 | 143 | 130 | 00389 | 24006 |
| 320120 | 136 | 054 | 104 | 328 | 124 | 102 | 03301 | 14863 |
| 320201 | 148 | 064 | 350 | 582 | 115 | 114 | 03026 | 58398 |
| 320202 | 180 | 088 | 436 | 734 | 113 | 114 | 08466 | 28471 |
| 320203 | 164 | 072 | 068 | 324 | 141 | 136 | 05718 | 09792 |
| 320204 | 240 | 078 | 090 | 428 | 148 | 141 | 06835 | 14096 |
| 320205 | 254 | 084 | 086 | 474 | 137 | 121 | 08253 | 11390 |
| 320206 | 404 | 080 | 050 | 996 | 147 | 119 | 09903 | 07636 |
| 320207 | 074 | 030 | 484 | 614 | 103 | 105 | 00919 | 58763 |
| 320208 | 138 | 092 | 050 | 300 | 125 | 123 | 05519 | 05495 |
| 320209 | 236 | 066 | 076 | 398 | 152 | 146 | 05176 | 11575 |
| 320210 | 274 | 080 | 048 | 494 | 147 | 123 | 06792 | 06044 |
| 320211 | 104 | 078 | 074 | 328 | 142 | 109 | 02971 | 09315 |
| 320212 | 304 | 078 | 104 | 512 | 145 | 126 | 04548 | 15720 |
| 320213 | 228 | 078 | 338 | 664 | 120 | 121 | 07309 | 43480 |
| 320214 | 120 | 062 | 058 | 322 | 140 | 107 | 04784 | 03348 |
| 320215 | 228 | 094 | 394 | 726 | 130 | 130 | 08000 | 33575 |
| 320216 | 084 | 050 | 032 | 186 | 097 | 136 | 03806 | 01253 |
| 320217 | 158 | 034 | 056 | 268 | 133 | 149 | 03164 | 09876 |
| 320218 | 130 | 090 | 064 | 354 | 157 | 132 | 06663 | 08573 |
| 320219 | 158 | 078 | 084 | 340 | 148 | 138 | 05797 | 11787 |
| 320220 | 070 | 030 | 108 | 244 | 122 | 111 | 01251 | 12603 |
| 320401 | 094 | 110 | 032 | 256 | 105 | 135 | 05093 | 02319 |
| 320402 | 124 | 092 | 040 | 276 | 102 | 133 | 03420 | 02749 |
| 320403 | 124 | 086 | 056 | 286 | 099 | 128 | 03346 | 00971 |
| 320404 | 116 | 096 | 036 | 268 | 081 | 109 | 04997 | 01346 |
| 320405 | 092 | 096 | 140 | 358 | 119 | 115 | 05177 | 09828 |
| 320406 | 188 | 100 | 104 | 412 | 140 | 134 | 04368 | 11252 |
| 320407 | 088 | 096 | 094 | 332 | 125 | 106 | 05866 | 07234 |
| 320408 | 162 | 108 | 072 | 342 | 109 | 109 | 06915 | 09477 |
| 320409 | 114 | 066 | 292 | 492 | 115 | 115 | 05210 | 23002 |
| 320410 | 096 | 060 | 070 | 646 | 136 | 123 | 03955 | 05851 |
| 320411 | 126 | 094 | 042 | 282 | 107 | 118 | 06086 | 02589 |
| 320412 | 134 | 100 | 090 | 344 | 137 | 128 | 07338 | 08329 |
| 320413 | 100 | 044 | 030 | 194 | 108 | 142 | 03644 | 01753 |
| 320414 | 076 | 038 | 100 | 234 | 127 | 124 | 01750 | 11422 |
| 320415 | 106 | 060 | 188 | 374 | 112 | 112 | 05208 | 29741 |
| 320416 | 088 | 058 | 082 | 268 | 130 | 125 | 03425 | 05599 |
| 320417 | 138 | 092 | 048 | 298 | 104 | 120 | 05994 | 01930 |
| 320418 | 078 | 096 | 038 | 232 | 085 | 109 | 03331 | 03661 |
| 320419 | 180 | 116 | 038 | 354 | 094 | 120 | 05340 | 01978 |
| 320420 | 070 | 036 | 154 | 306 | 120 | 112 | 02036 | 11380 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 340101 | 080 | 126 | 030 | 256 | 216 | 237 | 12192 | 00356 |
| 340102 | 072 | 118 | 034 | 244 | 198 | 221 | 11342 | 00470 |
| 340103 | 074 | 046 | 220 | 420 | 241 | 241 | 04265 | 27683 |
| 340104 | 082 | 160 | 040 | 302 | 219 | 242 | 10239 | 01261 |
| 340105 | 070 | 086 | 066 | 242 | 225 | 243 | 09599 | 03453 |
| 340106 | 154 | 030 | 158 | 368 | 194 | 185 | 00553 | 10710 |
| 340107 | 072 | 096 | 086 | 274 | 264 | 268 | 09738 | 05427 |
| 340108 | 088 | 076 | 236 | 446 | 244 | 245 | 09184 | 25368 |
| 340109 | 090 | 084 | 030 | 226 | 135 | 185 | 11088 | 01599 |
| 340110 | 088 | 110 | 182 | 638 | 273 | 247 | 13511 | 12568 |
| 340111 | 104 | 030 | 402 | 999 | 233 | 233 | 02498 | 58788 |
| 340112 | 092 | 078 | 140 | 482 | 254 | 251 | 07437 | 11891 |
| 340113 | 098 | 066 | 172 | 552 | 256 | 247 | 05767 | 14421 |
| 340114 | 070 | 050 | 030 | 170 | 201 | 241 | 05264 | 03769 |
| 340115 | 072 | 064 | 194 | 330 | 248 | 248 | 07623 | 21938 |
| 340116 | 078 | 072 | 112 | 284 | 262 | 262 | 07979 | 06995 |
| 340117 | 082 | 034 | 166 | 366 | 233 | 223 | 02588 | 07844 |
| 340118 | 072 | 048 | 304 | 424 | 242 | 242 | 05646 | 37112 |
| 340119 | 092 | 048 | 044 | 204 | 142 | 188 | 04913 | 06999 |
| 340120 | 098 | 100 | 162 | 538 | 263 | 241 | 12568 | 15632 |
| 340201 | 256 | 092 | 130 | 498 | 269 | 267 | 07568 | 12699 |
| 340202 | 358 | 064 | 130 | 688 | 256 | 247 | 05028 | 08950 |
| 340203 | 232 | 104 | 118 | 490 | 269 | 246 | 10264 | 14612 |
| 340204 | 198 | 092 | 030 | 340 | 194 | 233 | 10432 | 01658 |
| 340205 | 302 | 066 | 038 | 426 | 184 | 220 | 06736 | 02460 |
| 340206 | 290 | 042 | 052 | 404 | 155 | 204 | 03612 | 01307 |
| 340207 | 186 | 054 | 054 | 315 | 175 | 208 | 04022 | 02478 |
| 340208 | 212 | 096 | 116 | 424 | 269 | 269 | 09309 | 09645 |
| 340209 | 220 | 044 | 140 | 438 | 264 | 254 | 05976 | 13581 |
| 340210 | 466 | 088 | 144 | 828 | 267 | 258 | 06158 | 12168 |
| 340211 | 166 | 082 | 122 | 390 | 239 | 242 | 05473 | 11004 |
| 340212 | 256 | 102 | 030 | 408 | 202 | 244 | 08624 | 01820 |
| 340213 | 184 | 098 | 104 | 566 | 261 | 247 | 09354 | 11472 |
| 340214 | 326 | 092 | 106 | 996 | 263 | 248 | 08424 | 10067 |
| 340215 | 276 | 098 | 108 | 510 | 275 | 270 | 09533 | 10326 |
| 340216 | 234 | 076 | 116 | 446 | 268 | 263 | 07056 | 11003 |
| 340217 | 310 | 084 | 112 | 998 | 254 | 250 | 08335 | 11449 |
| 340218 | 262 | 096 | 110 | 492 | 254 | 251 | 06332 | 09702 |
| 340219 | 282 | 096 | 144 | 580 | 251 | 245 | 07408 | 13982 |
| 340220 | 154 | 084 | 034 | 292 | 185 | 232 | 09072 | 00600 |
| 340401 | 094 | 128 | 094 | 400 | 244 | 233 | 10906 | 09000 |
| 340402 | 084 | 070 | 034 | 208 | 161 | 204 | 07189 | 06787 |
| 340403 | 080 | 126 | 090 | 316 | 247 | 241 | 07917 | 13353 |
| 340404 | 092 | 032 | 170 | 314 | 220 | 214 | 01420 | 15821 |
| 340405 | 100 | 078 | 188 | 386 | 250 | 248 | 09893 | 22801 |
| 340406 | 142 | 118 | 054 | 334 | 211 | 237 | 06709 | 05980 |
| 340407 | 086 | 122 | 336 | 999 | 237 | 240 | 10296 | 47410 |
| 340408 | 114 | 118 | 104 | 502 | 248 | 233 | 11523 | 11000 |
| 340409 | 070 | 042 | 124 | 256 | 243 | 237 | 04438 | 14353 |
| 340410 | 230 | 112 | 108 | 470 | 259 | 255 | 10249 | 12811 |
| 340411 | 102 | 094 | 110 | 306 | 253 | 253 | 09532 | 09436 |
| 340412 | 118 | 076 | 032 | 246 | 183 | 229 | 06549 | 02086 |
| 340413 | 076 | 064 | 126 | 326 | 257 | 243 | 05181 | 12661 |
| 340414 | 092 | 074 | 218 | 424 | 243 | 234 | 03228 | 22487 |
| 340415 | 090 | 116 | 090 | 086 | 247 | 241 | 08919 | 12536 |
| 340416 | 100 | 089 | 156 | 368 | 250 | 244 | 08968 | 18635 |
| 340417 | 088 | 052 | 068 | 310 | 244 | 226 | 07584 | 12444 |
| 340418 | 098 | 122 | 144 | 458 | 256 | 238 | 08524 | 10111 |
| 340419 | 122 | 056 | 188 | 452 | 246 | 220 | 09886 | 12564 |
| 340420 | 254 | 056 | 125 | 608 | 232 | 232 | 08562 | 18562 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 410101 | 350 | 030 | 060 | 460 | 052 | 069 | 00398 | 01697 |
| 410102 | 278 | 050 | 030 | 390 | 059 | 071 | 02042 | 01692 |
| 410103 | 200 | 030 | 138 | 388 | 075 | 065 | 00265 | 09130 |
| 410104 | 248 | 050 | 034 | 352 | 055 | 068 | 01826 | 00684 |
| 410105 | 190 | 030 | 108 | 352 | 059 | 054 | 00317 | 05630 |
| 410106 | 194 | 030 | 052 | 286 | 062 | 069 | 00524 | 02969 |
| 410107 | 320 | 030 | 054 | 690 | 061 | 043 | 00546 | 01089 |
| 410108 | 240 | 078 | 050 | 388 | 077 | 080 | 03459 | 01928 |
| 410109 | 236 | 038 | 066 | 360 | 052 | 062 | 00347 | 00758 |
| 410110 | 194 | 030 | 064 | 308 | 057 | 072 | 00384 | 02353 |
| 410111 | 432 | 060 | 036 | 548 | 053 | 063 | 01769 | 00753 |
| 410112 | 222 | 058 | 042 | 342 | 046 | 059 | 00996 | 01466 |
| 410113 | 320 | 050 | 060 | 460 | 054 | 065 | 00569 | 01526 |
| 410114 | 256 | 060 | 050 | 396 | 058 | 066 | 02145 | 01368 |
| 410115 | 198 | 036 | 124 | 420 | 072 | 062 | 00865 | 02588 |
| 410116 | 248 | 050 | 034 | 352 | 055 | 068 | 01826 | 00984 |
| 410117 | 190 | 050 | 080 | 348 | 056 | 064 | 01254 | 00982 |
| 410118 | 254 | 060 | 036 | 368 | 059 | 061 | 00986 | 01266 |
| 410119 | 368 | 066 | 128 | 584 | 066 | 064 | 00854 | 02214 |
| 410120 | 420 | 036 | 030 | 580 | 060 | 062 | 01255 | 00985 |
| 410201 | 186 | 054 | 078 | 348 | 085 | 064 | 03198 | 08052 |
| 410202 | 228 | 042 | 030 | 320 | 072 | 091 | 01837 | 00922 |
| 410203 | 206 | 058 | 034 | 318 | 076 | 097 | 01476 | 01787 |
| 410204 | 226 | 040 | 425 | 738 | 047 | 047 | 01153 | 19776 |
| 410205 | 186 | 062 | 044 | 312 | 090 | 093 | 03151 | 01730 |
| 410206 | 228 | 048 | 118 | 414 | 074 | 064 | 01333 | 10073 |
| 410207 | 222 | 070 | 058 | 416 | 096 | 068 | 05749 | 02529 |
| 410208 | 190 | 044 | 080 | 314 | 078 | 078 | 01823 | 04215 |
| 410209 | 266 | 050 | 030 | 366 | 056 | 072 | 02386 | 01631 |
| 410210 | 174 | 030 | 058 | 282 | 060 | 075 | 00212 | 02600 |
| 410211 | 206 | 064 | 042 | 332 | 085 | 092 | 03375 | 01827 |
| 410212 | 138 | 046 | 052 | 256 | 079 | 060 | 00986 | 03887 |
| 410213 | 118 | 054 | 092 | 284 | 094 | 086 | 02334 | 09748 |
| 410214 | 176 | 048 | 082 | 330 | 108 | 091 | 03666 | 06975 |
| 410215 | 152 | 032 | 048 | 552 | 077 | 048 | 00982 | 01763 |
| 410216 | 254 | 078 | 094 | 852 | 094 | 065 | 02489 | 04422 |
| 410217 | 240 | 050 | 030 | 340 | 071 | 062 | 01414 | 01650 |
| 410218 | 242 | 064 | 116 | 454 | 091 | 065 | 03438 | 05211 |
| 410219 | 406 | 038 | 030 | 474 | 055 | 055 | 01445 | 00592 |
| 410220 | 272 | 030 | 176 | 498 | 086 | 077 | 02144 | 14817 |
| 410401 | 324 | 046 | 096 | 490 | 092 | 073 | 01811 | 10176 |
| 410402 | 132 | 070 | 112 | 334 | 089 | 081 | 03703 | 06505 |
| 410403 | 238 | 050 | 092 | 400 | 101 | 094 | 03095 | 04192 |
| 410404 | 214 | 042 | 050 | 326 | 070 | 090 | 00873 | 01751 |
| 410405 | 280 | 030 | 070 | 422 | 080 | 058 | 00191 | 06609 |
| 410406 | 226 | 050 | 098 | 412 | 096 | 079 | 02451 | 09038 |
| 410407 | 206 | 042 | 036 | 304 | 060 | 081 | 01444 | 01093 |
| 410408 | 256 | 042 | 030 | 348 | 074 | 099 | 02068 | 00384 |
| 410409 | 070 | 034 | 418 | 542 | 045 | 047 | 01267 | 33069 |
| 410410 | 164 | 068 | 080 | 354 | 094 | 071 | 04294 | 04921 |
| 410411 | 270 | 056 | 078 | 440 | 101 | 087 | 03768 | 05925 |
| 410412 | 192 | 060 | 092 | 366 | 105 | 091 | 04128 | 07160 |
| 410413 | 148 | 050 | 030 | 248 | 069 | 091 | 02512 | 00902 |
| 410414 | 100 | 058 | 094 | 874 | 087 | 058 | 02341 | 08216 |
| 410415 | 152 | 062 | 122 | 356 | 095 | 085 | 03519 | 09209 |
| 410416 | 148 | 058 | 030 | 256 | 072 | 097 | 01804 | 00845 |
| 410417 | 136 | 054 | 072 | 330 | 110 | 079 | 04641 | 06589 |
| 410418 | 134 | 062 | 086 | 320 | 091 | 073 | 03559 | 05871 |
| 410419 | 100 | 070 | 030 | 220 | 078 | 066 | 02085 | 01192 |
| 410420 | 084 | 032 | 040 | 176 | 068 | 065 | 02599 | 03214 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 420101 | 282 | 038 | 158 | 498 | 123 | 115 | 02008 | 06722 |
| 420102 | 194 | 058 | 038 | 310 | 097 | 116 | 03760 | 00799 |
| 420103 | 086 | 072 | 042 | 220 | 118 | 137 | 03186 | 02646 |
| 420104 | 186 | 076 | 120 | 406 | 146 | 141 | 03137 | 05762 |
| 420105 | 330 | 050 | 040 | 440 | 097 | 124 | 02939 | 01260 |
| 420106 | 182 | 114 | 092 | 980 | 142 | 124 | 03942 | 04251 |
| 420107 | 080 | 054 | 064 | 218 | 126 | 125 | 02514 | 02567 |
| 420108 | 144 | 070 | 114 | 486 | 141 | 128 | 02832 | 06209 |
| 420109 | 140 | 060 | 080 | 280 | 161 | 141 | 06322 | 07002 |
| 420110 | 156 | 066 | 088 | 332 | 165 | 139 | 04814 | 07988 |
| 420111 | 246 | 040 | 130 | 490 | 130 | 112 | 02821 | 07219 |
| 420112 | 252 | 032 | 096 | 400 | 119 | 117 | 00851 | 05932 |
| 420113 | 260 | 044 | 044 | 368 | 087 | 107 | 01717 | 02038 |
| 420114 | 128 | 072 | 034 | 254 | 071 | 091 | 03103 | 00206 |
| 420115 | 074 | 044 | 052 | 190 | 102 | 125 | 01417 | 01687 |
| 420116 | 236 | 046 | 194 | 506 | 128 | 125 | 02311 | 09024 |
| 420117 | 146 | 102 | 030 | 298 | 115 | 139 | 02304 | 01644 |
| 420118 | 156 | 076 | 102 | 354 | 141 | 141 | 06182 | 07546 |
| 420119 | 278 | 050 | 046 | 394 | 112 | 135 | 02517 | 01905 |
| 420120 | 186 | 112 | 090 | 390 | 140 | 126 | 03842 | 04222 |
| 420201 | 144 | 100 | 200 | 834 | 125 | 121 | 02822 | 07632 |
| 420202 | 192 | 138 | 048 | 398 | 115 | 126 | 07204 | 00457 |
| 420203 | 204 | 032 | 122 | 378 | 105 | 122 | 05422 | 03714 |
| 420204 | 142 | 140 | 032 | 334 | 127 | 139 | 08554 | 00666 |
| 420205 | 168 | 030 | 050 | 268 | 083 | 102 | 00868 | 01393 |
| 420206 | 172 | 100 | 030 | 322 | 101 | 118 | 04352 | 01588 |
| 420207 | 088 | 094 | 214 | 416 | 112 | 113 | 04421 | 09750 |
| 420208 | 133 | 114 | 438 | 722 | 116 | 119 | 02956 | 12974 |
| 420209 | 288 | 044 | 030 | 382 | 113 | 122 | 02481 | 01104 |
| 420210 | 174 | 116 | 110 | 918 | 258 | 247 | 06975 | 06805 |
| 420210 | 154 | 074 | 160 | 426 | 133 | 120 | 04017 | 09336 |
| 420210 | 148 | 146 | 144 | 580 | 275 | 246 | 10222 | 10250 |
| 420211 | 126 | 150 | 030 | 326 | 095 | 112 | 04037 | 00661 |
| 420211 | 246 | 096 | 084 | 446 | 263 | 272 | 08326 | 05752 |
| 420212 | 282 | 086 | 030 | 418 | 190 | 236 | 05687 | 01171 |
| 420212 | 194 | 030 | 116 | 602 | 104 | 117 | 02458 | 08056 |
| 420213 | 078 | 050 | 040 | 192 | 090 | 120 | 02322 | 01021 |
| 420214 | 224 | 030 | 030 | 304 | 150 | 191 | 02474 | 01945 |
| 420214 | 182 | 058 | 058 | 408 | 117 | 128 | 07128 | 04214 |
| 420215 | 186 | 066 | 102 | 458 | 128 | 122 | 05684 | 05662 |
| 420215 | 176 | 094 | 032 | 322 | 175 | 219 | 05475 | 02775 |
| 420216 | 200 | 098 | 188 | 506 | 277 | 271 | 07880 | 16841 |
| 420216 | 158 | 030 | 036 | 310 | 126 | 122 | 06548 | 07524 |
| 420217 | 248 | 066 | 043 | 382 | 172 | 216 | 04232 | 02426 |
| 420217 | 258 | 088 | 066 | 432 | 136 | 125 | 07854 | 08566 |
| 420218 | 242 | 102 | 110 | 636 | 265 | 243 | 07971 | 06469 |
| 420218 | 158 | 056 | 036 | 288 | 122 | 120 | 05422 | 04526 |
| 420219 | 166 | 058 | 098 | 332 | 145 | 128 | 06524 | 07852 |
| 420219 | 236 | 052 | 076 | 384 | 193 | 231 | 02710 | 02324 |
| 420220 | 328 | 106 | 116 | 708 | 282 | 252 | 04109 | 09504 |
| 420220 | 202 | 078 | 120 | 420 | 136 | 128 | 04562 | 03210 |
| 420401 | 178 | 082 | 076 | 502 | 148 | 130 | 04520 | 04199 |
| 420402 | 160 | 088 | 096 | 364 | 147 | 143 | 06788 | 07038 |
| 420403 | 162 | 056 | 118 | 356 | 139 | 136 | 03184 | 06748 |
| 420404 | 132 | 104 | 092 | 636 | 143 | 130 | 06016 | 02025 |
| 420405 | 162 | 136 | 088 | 386 | 129 | 129 | 06686 | 03459 |
| 420406 | 102 | 058 | 038 | 218 | 094 | 116 | 03493 | 00884 |
| 420407 | 224 | 034 | 084 | 342 | 121 | 121 | 00814 | 04336 |
| 420408 | 218 | 070 | 030 | 338 | 089 | 114 | 02471 | 00955 |
| 420409 | 078 | 050 | 114 | 262 | 135 | 133 | 03359 | 07329 |

420410 174 030 090 464 098 098 02458 05221
 420411 116 056 108 280 136 136 02051 06961
 420412 206 034 034 294 081 102 00500 02568
 420413 144 036 246 446 110 109 00859 15382
 420414 228 030 132 420 103 096 01533 06920
 420415 244 030 132 326 137 136 05217 03018
 420416 318 030 142 530 106 123 05217 07661
 420417 140 036 190 386 117 114 05807 09427
 420418 206 068 110 404 126 122 05624 08542
 420419 198 088 102 408 145 125 08974 10256
 420420 254 060 036 340 128 122 06548 07632
 440101 284 080 034 418 189 229 07980 01781
 440102 252 072 048 392 171 204 05314 02531
 440103 222 058 194 494 248 247 03626 08414
 440104 296 072 036 424 174 209 04173 02287
 440105 176 098 030 324 189 228 06757 01990
 440106 238 066 038 362 175 215 05410 02093
 440107 132 068 234 454 252 248 04331 22947
 440108 222 096 100 438 264 268 07072 08094
 440109 250 066 136 804 289 256 06355 07614
 440110 202 092 038 352 190 227 08515 02562
 440111 182 078 056 336 169 198 04385 02722
 440112 106 082 034 242 187 218 06317 01890
 440113 228 030 088 368 197 208 05429 06432
 440114 226 074 042 362 224 273 05705 02397
 440115 278 030 112 468 185 182 01228 07773
 440116 102 172 132 326 248 244 05735 10044
 440117 170 086 054 288 171 207 04971 02411
 440118 226 102 040 388 199 243 06305 02141
 440119 128 076 030 254 182 228 05960 01000
 440120 154 080 036 290 185 225 05573 02595
 440201 212 090 030 352 195 252 06617 00972
 440202 226 132 036 414 211 248 11322 01099
 440202 226 132 036 414 211 248 11322 01099
 440204 242 074 176 512 240 232 04751 16336
 440205 296 086 034 436 188 226 04633 03139
 440206 388 084 072 564 229 240 06532 04004
 440207 230 080 038 368 201 237 08058 02841
 440208 290 108 036 454 178 214 04093 01636
 440209 364 084 030 498 205 243 03959 02930
 440401 494 056 126 776 229 230 05349 07920
 440402 564 052 156 970 246 230 03063 08312
 440403 238 096 030 386 195 222 08774 02793
 440404 406 030 158 614 215 215 05561 10285
 440405 560 044 278 902 224 225 02068 12715
 440406 370 076 030 496 168 198 05096 00476
 440407 282 030 098 430 180 207 05710 04472
 440408 252 104 148 996 242 245 05564 07075
 440409 236 126 034 416 183 219 04529 01002
 440410 160 106 402 694 245 246 06019 17440
 440411 172 140 090 402 252 252 06527 03223
 440412 164 094 124 448 246 241 08469 08104
 440413 188 124 130 462 231 234 04421 06924
 440414 206 152 326 704 242 242 05820 14328
 440415 320 166 112 662 236 228 06605 07108
 440416 258 160 116 996 264 251 12030 05646
 440417 198 124 044 386 179 211 05167 01022
 440418 172 106 336 924 245 249 05534 12873
 440419 282 030 036 368 226 238 07548 09542
 440420 310 040 040 410 228 241 08571 07024

510101 366 054 090 600 092 053 04960 09909
 510102 342 052 102 518 087 059 04728 20201
 510103 252 066 090 508 104 067 06228 12738
 510104 252 062 082 502 094 044 05112 09847
 510105 322 034 072 532 105 043 03037 11018
 510106 254 070 100 444 080 058 06283 16515
 510107 266 068 072 426 087 069 03926 11870
 510108 333 062 096 514 076 060 04311 19510
 510109 272 076 072 520 085 049 04233 08081
 510110 312 060 096 478 072 057 04929 18971
 510111 262 074 064 420 107 081 06069 11582
 510112 344 058 062 488 086 058 05304 10369
 510113 288 064 036 706 107 062 05773 04517
 510114 324 058 068 470 090 073 04558 14656
 510115 300 052 088 460 068 056 05377 17288
 510116 278 066 070 502 086 047 05326 08020
 510117 350 050 072 492 104 078 04083 12835
 510118 420 058 068 570 085 056 04477 12037
 510119 388 068 082 622 103 053 05864 11528
 510120 208 054 062 410 085 053 04959 08100
 510201 438 048 080 594 084 063 03112 08472
 510202 366 072 112 638 079 054 00936 07488
 510203 396 060 094 582 067 052 03190 14192
 510204 434 072 064 688 101 061 07910 07109
 510205 488 062 072 714 097 053 06688 07372
 510206 528 066 072 752 078 047 07240 04588
 510207 454 050 072 596 096 070 03586 11722
 510208 406 054 074 616 083 043 04549 10739
 510209 454 072 100 646 055 042 04744 22334
 510210 448 066 068 666 088 039 05991 12770
 510211 430 074 070 654 075 033 06546 09670
 510212 458 056 094 660 057 035 03318 13971
 510213 456 054 104 636 053 038 03935 24491
 510214 500 054 072 646 080 058 03879 10434
 510215 462 072 096 650 053 038 05893 25663
 510216 410 058 076 624 079 041 03191 11054
 510217 400 072 104 596 059 045 05394 24853
 510218 476 070 102 668 055 034 05276 24345
 510219 426 056 082 584 066 046 03033 11919
 510220 406 052 068 556 076 049 03124 08197
 510401 346 068 066 574 100 049 07036 07651
 510402 388 066 084 622 077 046 03239 10547
 510403 372 066 070 608 096 053 05639 06523
 510404 422 064 074 646 087 043 04600 10541
 510405 440 058 034 552 084 065 04098 01034
 510406 424 046 034 524 070 062 01751 01682
 510407 492 064 076 652 090 068 02049 10669
 510408 372 060 078 606 088 047 03471 09577
 510409 420 068 076 668 089 049 05433 04720
 510410 394 066 070 624 102 058 06528 07209
 510411 428 060 076 638 083 038 02985 10932
 510412 456 066 070 696 091 039 03634 09938
 510413 422 052 086 584 086 058 01250 13054
 510414 410 058 078 586 090 042 04594 12827
 510415 398 072 078 592 098 069 02542 08858
 510416 484 062 082 722 088 050 04688 10162
 510417 394 054 074 564 100 055 04183 09487
 510418 384 068 070 608 098 051 07383 05248
 510419 336 040 104 504 070 046 01429 16604
 510420 402 056 094 574 079 054 03483 13360

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 520101 | 070 | 038 | 162 | 292 | 124 | 121 | 02779 | 10571 |
| 520102 | 110 | 052 | 110 | 358 | 118 | 112 | 02783 | 05032 |
| 520103 | 100 | 060 | 098 | 258 | 156 | 156 | 04580 | 06294 |
| 520104 | 090 | 064 | 142 | 344 | 137 | 130 | 02734 | 08655 |
| 520105 | 384 | 068 | 030 | 502 | 110 | 130 | 04503 | 01270 |
| 520106 | 078 | 080 | 096 | 274 | 147 | 139 | 05689 | 06035 |
| 520107 | 114 | 066 | 088 | 314 | 141 | 135 | 05027 | 05428 |
| 520108 | 084 | 074 | 042 | 220 | 125 | 131 | 05014 | 02591 |
| 520109 | 110 | 066 | 118 | 748 | 129 | 122 | 03139 | 05840 |
| 520110 | 098 | 062 | 030 | 210 | 095 | 123 | 04179 | 00469 |
| 520111 | 106 | 042 | 066 | 334 | 133 | 131 | 02342 | 12261 |
| 520112 | 142 | 094 | 070 | 436 | 136 | 122 | 07230 | 03367 |
| 520113 | 478 | 078 | 134 | 756 | 150 | 123 | 04788 | 07641 |
| 520114 | 118 | 072 | 036 | 240 | 081 | 104 | 02691 | 00661 |
| 520115 | 134 | 064 | 088 | 352 | 148 | 126 | 04713 | 07996 |
| 520116 | 116 | 080 | 042 | 258 | 138 | 144 | 05470 | 06095 |
| 520117 | 120 | 064 | 092 | 468 | 141 | 122 | 04312 | 05103 |
| 520118 | 206 | 046 | 132 | 426 | 129 | 114 | 02587 | 10421 |
| 520119 | 186 | 066 | 130 | 438 | 139 | 127 | 04136 | 11172 |
| 520120 | 202 | 050 | 030 | 302 | 101 | 129 | 03939 | 00800 |
| 520201 | 346 | 076 | 094 | 626 | 150 | 108 | 04565 | 11600 |
| 520202 | 512 | 078 | 076 | 692 | 151 | 125 | 06700 | 11210 |
| 520203 | 310 | 060 | 046 | 436 | 154 | 127 | 06462 | 01568 |
| 520204 | 342 | 076 | 082 | 600 | 057 | 126 | 06466 | 13164 |
| 520205 | 360 | 080 | 088 | 554 | 150 | 126 | 04436 | 12780 |
| 520206 | 380 | 058 | 106 | 568 | 147 | 123 | 04368 | 15802 |
| 520207 | 306 | 074 | 116 | 516 | 130 | 114 | 04661 | 18222 |
| 520208 | 340 | 056 | 116 | 532 | 140 | 122 | 04376 | 14535 |
| 520209 | 244 | 084 | 112 | 460 | 145 | 119 | 09159 | 29883 |
| 520210 | 292 | 072 | 104 | 506 | 155 | 117 | 05294 | 11579 |
| 520211 | 314 | 100 | 092 | 554 | 150 | 103 | 06697 | 09192 |
| 520212 | 428 | 088 | 134 | 660 | 118 | 109 | 07281 | 25376 |
| 520213 | 400 | 082 | 322 | 824 | 121 | 122 | 06308 | 55552 |
| 520214 | 324 | 082 | 108 | 608 | 145 | 100 | 07311 | 13784 |
| 520215 | 416 | 072 | 088 | 618 | 163 | 115 | 07208 | 13877 |
| 520216 | 384 | 084 | 092 | 596 | 144 | 111 | 05728 | 13404 |
| 520217 | 306 | 096 | 084 | 618 | 148 | 107 | 06154 | 12585 |
| 520218 | 322 | 084 | 084 | 998 | 173 | 115 | 09012 | 13196 |
| 520219 | 474 | 070 | 084 | 674 | 185 | 128 | 06754 | 13871 |
| 520220 | 410 | 076 | 112 | 618 | 134 | 112 | 08388 | 23674 |
| 520401 | 514 | 078 | 088 | 724 | 172 | 122 | 06845 | 15052 |
| 520402 | 360 | 048 | 112 | 550 | 145 | 109 | 03058 | 13725 |
| 520403 | 364 | 082 | 082 | 654 | 141 | 107 | 06743 | 11211 |
| 520404 | 390 | 062 | 108 | 590 | 147 | 114 | 04958 | 13733 |
| 520405 | 414 | 082 | 092 | 690 | 138 | 102 | 04819 | 10680 |
| 520406 | 388 | 056 | 086 | 698 | 148 | 115 | 05954 | 14302 |
| 520407 | 364 | 060 | 084 | 530 | 150 | 127 | 05869 | 13566 |
| 520408 | 358 | 066 | 072 | 516 | 157 | 141 | 04490 | 07754 |
| 520409 | 422 | 084 | 060 | 732 | 163 | 114 | 07986 | 10127 |
| 520410 | 388 | 060 | 036 | 504 | 121 | 146 | 03996 | 01447 |
| 520411 | 342 | 058 | 110 | 532 | 135 | 117 | 02581 | 15373 |
| 520412 | 342 | 080 | 088 | 542 | 176 | 131 | 07493 | 14630 |
| 520413 | 398 | 056 | 104 | 592 | 155 | 111 | 06315 | 16761 |
| 520414 | 382 | 058 | 118 | 580 | 153 | 130 | 04205 | 16871 |
| 520415 | 398 | 084 | 100 | 602 | 139 | 118 | 09356 | 19066 |
| 520416 | 446 | 076 | 086 | 654 | 157 | 105 | 05572 | 15484 |
| 520417 | 296 | 076 | 032 | 424 | 154 | 120 | 05589 | 04512 |
| 520418 | 240 | 082 | 036 | 378 | 184 | 228 | 07710 | 01384 |
| 520419 | 318 | 070 | 106 | 522 | 139 | 110 | 04723 | 13221 |
| 520420 | 346 | 078 | 090 | 550 | 161 | 119 | 07624 | 13129 |

| | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|
| 540101 | 570 | 066 | 130 | 870 | 287 | 221 | 08244 | 20164 |
| 540102 | 448 | 144 | 114 | 882 | 310 | 240 | 07862 | 14116 |
| 540103 | 418 | 100 | 146 | 746 | 274 | 227 | 04978 | 17327 |
| 540104 | 426 | 120 | 128 | 694 | 308 | 268 | 08337 | 17244 |
| 540105 | 518 | 144 | 040 | 622 | 205 | 262 | 02655 | 02624 |
| 540106 | 488 | 034 | 144 | 690 | 241 | 217 | 02464 | 18412 |
| 540107 | 452 | 130 | 126 | 756 | 289 | 245 | 07543 | 14457 |
| 540108 | 552 | 084 | 110 | 886 | 285 | 220 | 08087 | 13374 |
| 540109 | 502 | 070 | 054 | 646 | 253 | 262 | 08256 | 01310 |
| 540110 | 476 | 076 | 128 | 700 | 299 | 278 | 05904 | 17545 |
| 540111 | 432 | 062 | 056 | 570 | 246 | 280 | 07120 | 01021 |
| 540112 | 338 | 114 | 098 | 570 | 304 | 270 | 10906 | 12735 |
| 540113 | 398 | 072 | 112 | 660 | 290 | 215 | 05631 | 12567 |
| 540114 | 440 | 038 | 136 | 734 | 234 | 197 | 01124 | 16502 |
| 540115 | 532 | 084 | 086 | 850 | 291 | 222 | 09296 | 14145 |
| 540116 | 396 | 054 | 144 | 692 | 235 | 197 | 02261 | 17231 |
| 540117 | 446 | 052 | 114 | 668 | 240 | 208 | 02703 | 14038 |
| 540118 | 490 | 030 | 060 | 600 | 200 | 242 | 01645 | 00368 |
| 540119 | 430 | 098 | 142 | 692 | 266 | 244 | 05597 | 17414 |
| 540120 | 486 | 072 | 110 | 688 | 280 | 261 | 05868 | 14365 |
| 540201 | 628 | 058 | 046 | 752 | 213 | 257 | 05409 | 00710 |
| 540202 | 648 | 072 | 108 | 936 | 276 | 230 | 08986 | 15313 |
| 540203 | 588 | 068 | 128 | 928 | 277 | 237 | 08987 | 14264 |
| 540204 | 624 | 078 | 108 | 950 | 275 | 229 | 05662 | 18057 |
| 540205 | 690 | 064 | 108 | 976 | 244 | 196 | 07398 | 15747 |
| 540206 | 506 | 062 | 120 | 834 | 264 | 230 | 05394 | 16126 |
| 540207 | 712 | 066 | 034 | 832 | 216 | 267 | 07463 | 02949 |
| 540208 | 480 | 086 | 096 | 682 | 279 | 252 | 09267 | 17250 |
| 540209 | 530 | 068 | 132 | 750 | 260 | 231 | 06514 | 21189 |
| 540210 | 480 | 086 | 084 | 670 | 280 | 075 | 08440 | 12184 |
| 540211 | 528 | 090 | 122 | 760 | 266 | 240 | 07462 | 21921 |
| 540212 | 498 | 104 | 100 | 882 | 283 | 246 | 09775 | 14515 |
| 540213 | 582 | 098 | 128 | 856 | 264 | 231 | 12035 | 16595 |
| 540214 | 458 | 092 | 116 | 798 | 271 | 237 | 05800 | 16046 |
| 540215 | 502 | 106 | 030 | 658 | 205 | 256 | 05263 | 01634 |
| 540216 | 532 | 098 | 120 | 846 | 281 | 236 | 09981 | 15787 |
| 540217 | 572 | 040 | 128 | 900 | 230 | 192 | 04226 | 19033 |
| 540218 | 430 | 114 | 132 | 768 | 255 | 228 | 05324 | 17208 |
| 540219 | 524 | 090 | 134 | 830 | 282 | 237 | 09481 | 15400 |
| 540220 | 604 | 068 | 110 | 802 | 279 | 262 | 09242 | 14707 |
| 540401 | 444 | 104 | 098 | 840 | 303 | 266 | 11385 | 13741 |
| 540402 | 452 | 076 | 050 | 598 | 223 | 264 | 04200 | 04286 |
| 540403 | 426 | 092 | 114 | 692 | 304 | 248 | 05014 | 20891 |
| 540404 | 454 | 084 | 114 | 766 | 292 | 226 | 08919 | 16548 |
| 540405 | 248 | 096 | 122 | 586 | 292 | 227 | 08704 | 19476 |
| 540406 | 324 | 114 | 038 | 496 | 239 | 279 | 09732 | 01785 |
| 540407 | 352 | 080 | 140 | 608 | 272 | 235 | 06175 | 24000 |
| 540408 | 444 | 032 | 044 | 540 | 199 | 232 | 01639 | 02455 |
| 540409 | 322 | 048 | 148 | 614 | 284 | 236 | 02865 | 23815 |
| 540410 | 198 | 232 | 114 | 736 | 285 | 241 | 12450 | 14745 |
| 540411 | 304 | 072 | 146 | 570 | 274 | 237 | 05936 | 20888 |
| 540412 | 088 | 222 | 046 | 376 | 252 | 285 | 11398 | 01583 |
| 540413 | 378 | 078 | 136 | 772 | 269 | 238 | 05680 | 16258 |
| 540414 | 322 | 092 | 120 | 566 | 271 | 238 | 09119 | 19271 |
| 540415 | 350 | 076 | 044 | 490 | 236 | 284 | 05785 | 04597 |
| 540416 | 362 | 072 | 138 | 646 | 295 | 247 | 10454 | 12186 |
| 540417 | 300 | 076 | 108 | 676 | 274 | 240 | 09022 | 15211 |
| 540418 | 342 | 100 | 118 | 734 | 293 | 226 | 10640 | 17513 |
| 540419 | 388 | 046 | 030 | 484 | 209 | 246 | 03839 | 02522 |
| 540420 | 510 | 042 | 086 | 658 | 243 | 229 | 03042 | 11178 |

B30348